The RUBBER AGE

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Late News of the Rubber Industry

Advance in Tire Prices Is Expected in Industry

AUTHORITIES in the industry declare that it is generally understood that an advance in tire prices is contemplated in the near future by the major rubber companies. Announcement of the prospective increase in tire prices is expected shortly, according to these sources, although the new schedule will probably not be put into effect until April 15. The recent strength in the crude rubber and cotton markets is said to give ample justification for the proposed advance.

James D. Tew, president of the B. F. Goodrich Company, however, does not expect any such increase in the near future. "In the last few days," he states, "there have been many rumors circulating on the possibility of an immediate price increase for tires. So far as the Goodrich Company is concerned, I can see no justification for a change in tire prices, and prices now in effect, in my opinion, will be continued for some time."

Intercontinental Rubber Shows Profit of $190,348 During 1928

COMPLETE annual reports of the Intercontinental Rubber Company and subsidiaries for the year ended December 31, 1928, show a net profit of $190,348 after expenses, depreciation and federal taxes, equivalent to 32 cents a share earned on 596,004 shares of no-par stock. This compares with a net profit of $659,066 or $1.11 a share in 1927 and $764,122 or $1.29 a share in 1926.

After payment of first-quarter dividends there was a surplus for the year of $41,534, compared with $64,221 in 1927 and $170,116 in 1926. No other dividends have been paid since this quarterly payment of 25 cents a share on March 31, 1928. Profit and loss surplus stood at $1,096,759 at the end of last year, against $1,047,898 at the end of 1927.

For the first six months of 1928 the company reported a net income of $278,440. Losses in the second half, following the shutting down of guayule reduction plants and curtailment of exports from Mexico, brought this figure down to the lower one shown for the end of the year. As of June 30, 1928, surplus after dividends was $129,625 and profit and loss surplus stood at $1,177,519.

The consolidated balance sheet of the company shows total assets of $7,566,718, of which land, buildings, equities, patents, trade names, etc., are represented by $4,585,181 after depreciation and amortization. Call loans amounted to $2,100,000 and cash to $133,720. Inventories were figured at $440,070.

Of the consolidated liabilities, drafts and accounts payable totaled only $119,162, the remainder being represented by capital stock, reserve and surplus. Current assets as of December 31 were $2,731,273 and current liabilities $129,162.

The consolidated income account for the year 1928 compares with the two previous years as follows:

	1928	1927	1926
Oper. prof.	$427,091	$923,327	$1,109,906
Other inc.	132,296	102,752	79,949
Total inc.	$559,387	$1,026,079	$1,189,855
Exp., etc.	202,330	126,371	183,177
Interest	.....	.....	9,072
Depreciation	138,666	134,642	119,991
Fed. taxes	28,043	106,000	113,493
Net profit	$190,348	$659,066	$764,122
Dividends	148,814	594,845	594,006
Surplus	$41,534	$64,221	$170,116

Pacific Goodrich is Expanding Toward 7,500-Tire Daily Output

RAPID strides in the progress of the Pacific Goodrich Rubber Company, Los Angeles, Cal., have made necessary a program of expansion which will increase the original tire capacity of the factories by 50 per cent. Production at the Los Angeles branch plant of the B. F. Goodrich Company is now averaging 5,000 tires daily, according to J. C. Herbert, secretary, and will be brought up to 6,000 in the near future and to 7,500 within the next few months.

The company is now completing the installation of additional machinery necessary to bring the plant up to its capacity production of tires, tubes and accessories. New vulcanizing kettles are being set in place, more tire building units added, and additional mills are being installed. Other equipment is arriving daily at the factory, including large vulcanizing cylinders in which Goodrich tires are water-cured.

The necessity for increased production at the Los Angeles plant after only eight or nine months of operation under the original equipment is due to a rapid growth of demand for the company's products not only from the 13 western states served by Pacific Goodrich, but from Japan, the Philippine Islands and other export points. The Far East is increasing in size as an outlet for Los Angeles factories, and one of the largest single shipments of tires which ever left the port of Los Angeles was sent out last month by the Pacific Goodrich Rubber Company via the Dollar Line.

At the present time the output of Pacific Goodrich is not sufficient to take care of the demand, and the deficiency is made up by the shipment of tires from the Akron factories of the organization.

United States Rubber Company Starts Consolidation Program

SETTING aside a reserve of $10,000,000 out of its surplus, the United States Rubber Company has taken the first steps toward providing for the disposition of such of its factories which have already been shut down or are about to be shut down, together with improvements of manufacturing facilities in other units. This action is taken in the trade as indicating a new program of consolidation and centralization of manufacturing facilities, closing down and disposing of plants which have been operating without profit and generally instituting operating economies under what is considered as the new du Pont management. It is this move which stands out as the most significant feature in the complete annual financial statement of the company, released on March 8.

L. Candee & Co. Plant, New Haven, Conn.

"During previous years, six of the smaller factories of the company have been discontinued as manufacturing units, and during the past year consideration has been given to the consolidation of activities which will permit the closing of additional plants," says F. B. Davis, Jr., president and chairman of the board of directors, in his report to stockholders. "Provision has also been made for the disposition of obsolete machinery and equipment, including obsolete tire molds, as well as for other general contingencies." It has already been announced that footwear manufacturing at the New Haven, Conn., plant of L. Candee & Company, said to be the oldest rubber company in the country, has been discontinued, although research, laboratory and machine shop work will still be carried on there for the other footwear plants in the company's chain. Plant No. 2 of the Boston Rubber Shoe Company, located at Melrose, Mass., has also been shut down, and operations increased at the Malden, Mass., factory of this subsidiary to make up the difference in production volume.

During 1928 the company had sales of $193,480,121 resulting in a net loss of $10,781,255 as against sales and profits in 1927 of $198,089,015 and $1,024,992 respectively and in 1926 of $215,528,309 and $8,535,380. The company showed a net profit for the last six months of 1928 amounting to $4,193,658, but this was wiped out by the losses sustained by writing down crude rubber inventories in the first half of the year.

Boston Rubber Shoe Co. Plant, Melrose, Mass.

In the consolidated balance sheet as of December 31, 1928, and after giving effect to the sale of additional common stock issued as of January 11, 1929, total assets were reported as $343,131,359 as compared with $339,995,932 for the year previous. Of this sum, properties, plants and equipment were figured at $105,098,009, inventories at $62,211,466, and net investment in intangible capital assets such as good will, patents, etc., after deducting fixed surpluses of subsidiary companies at $58,925,373.

Cash as of December 31 and receivable January 11 from new financing totaled $37,697,918, while accounts and notes receivable from customers and others aggregated $43,911,842. The investment in United States Rubber Plantations, Inc., is carried at $18,000,000 and the company's open account with that subsidiary at $6,597,777.

The funded debt of the company is figured at $104,475,000 and total current liabilities at $43,160,787. Of the latter figure, however, $25,750,000 was in bank loans, and $22,750,000 of these loans have already been paid with the aid of the December financing. Due to the adjustment of inventories, the provision for property disposition, and sundry other charges, the surplus of $40,146,387 reported as of December 31, 1927, has shrunk to $18,006,640.

The consolidated income account for 1928 compares as follows with the two previous years:

	1928	1927	1926
Sales	$193,480,121	$198,089,015	$215,528,309
Operating profit	14,530,711	12,522,952	17,928,750
Net profit U. S. R. Plan	.....	4,000,000	.....
Total	$14,530,711	$16,522,952	$17,928,750
Depr. res.	5,152,727	3,980,571	3,711,289
Interest	6,097,546	6,290,900	6,455,592
Balance	$3,280,438	$6,251,481	$7,761,869
Other income	*1,000,000	.....	*6,000,000
Total income	$4,280,438	$6,251,481	$13,761,869
Sub. dividends	23,389	17,689	17,689
Balance	$4,257,049	$6,233,792	$13,144,180
Inventory adj.	15,038,304	.....	.....
Net loss	$10,781,255	†$6,233,792	†$13,744,180
Pfd. dividends	.....	5,208,800	5,208,800
Loss	$10,781,255	†$1,024,992	†$8,535,380
Res. agt. invt.	.....	.....	8,535,380
Deficit	$10,781,255	‡$1,024,992	.....
Prev. surp.	40,146,386	40,798,675	41,061,685
§Sub. surp.	1,210,213	.....	.....
Trs. rf. USR plant at srp.	.....	8,000,000	.....
Total surplus	$30,575,344	$49,823,667	$41,061,685
Prop. & eq. adj.	10,000,000	.....	.....
Inven. adj. Jan. 1, 1927	.....	8,910,679	.....
Sundry chgs.	2,568,704	.....	.....
Adj. prev. years	.....	766,602	263,010
P. & L. surp.	$18,006,640	$40,146,386	$40,798,675

*Dividends received from U. S. Rubber Plantations, Inc. †Income. ‡Surplus. §Surplus December 31, 1927, of subsidiaries heretofore shown as securities of affiliated companies.

New Goodrich Tire Factory Will Be Built at Atlanta

JAMES D. TEW, president of the B. F. Goodrich Company, made public on March 13 plans for a third Goodrich plant in the United States, to be completed at Atlanta, Ga., by the end of this year. The announcement follows the purchase of 25 acres of land at 14th and Hemphill Streets, Atlanta. Construction will be started in the near future. Production will total 5,000 tires and 5,000 tubes a day.

With the acquisition of the Martha Mills at Thomaston, Ga., the first of this year, Goodrich will have made investments in the South to the total of more than $7,500,000 when the Atlanta plant is completed. The capacity of the cord mills at Thomaston will be more than doubled when

the present program of expansion has been completed. The original equipment of 30,000 spindles will be increased to 80,000, making this the largest plant of its kind in the South.

Several hundred acres of land in the vicinity of the mills has been purchased and the building program includes about 500 modern homes for mill employees. The little city has been named "Silvertown."

Atlanta was selected for the site of the southern tire plant following a period of investigation of southern manufacturing and distributing advantages. "The rapid industrial growth of the South," Mr. Tew said, "justifies a plant in that part of the United States." Built only a little more than a year ago, the Los Angeles Goodrich plant has been compelled to expand for greater production.

Goodyear Reported as Planning Huge Factory in South America

AMONG numerous rumors of new rubber company expansion projects, it is reported that the Goodyear Tire & Rubber Company is seriously considering the construction of a $5,000,000 plant in South America. The Akron *Times-Press,* which published this statement as "most authentic" on March 13, also declares that Goodyear has another foreign project under consideration, the details of which have not as yet been revealed.

"Charles A. Stillman, a vice-president of Goodyear, will leave shortly on a foreign trip," this newspaper states. "Date for his departure has not yet been set, but it is supposed that he will visit South America. No site has been picked yet, it is learned, although it was said upon good authority that Goodyear directors have authorized $5,000,000 for the project."

Argentina and Brazil are the two largest export markets for American tires, and, although these countries are close to a great supply of wild rubber, there is no tire manufacturing plant established in either at the present time. Rumors of American entrance into the rubber manufacturing field in South America have been frequent, and as far back as 1919 is was reported that Goodyear was considering the establishment of a branch factory there. In recent weeks, the French Michelin company has sought permission to build a rubber factory in Brazil and is also expected to construct a branch plant in Argentina.

Rubber Association Issues New Bulletins and Posters

THE Rubber Association of America, Inc., has prepared for general distribution its "Rules and Regulations to Govern Transactions Between Sellers and Factory Buyers of Crude Rubber in the United States of America." These are included in a booklet with a standard contract form, which was adopted by the association, effective as of February 1, 1928, and as amended July 2, 1928, and December 12, 1928. Heretofore these rules and regulations have been available only in mimeograph form, but due to the wide demand for copies they have now been printed and are available to any who may be interested on application.

The Rubber Association has also issued a revised list of trade names used by rubber clothing manufacturers. The list contains some 364 trade names registered by manufacturers with the association.

A bulletin entitled, "Current Original Tire Equipment on All Makes and Models of Passenger Cars" is another new publication of the association, issued under date of March 1. The bulletin gives the rim widths, tire sizes, number of plies, and recommended inflation pressures of front and rear tires on all 1929 model cars. This bulletin will be revised and reissued from time to time as important changes in original tire equipment are made.

As a part of the Rubber Association's educational campaign in the proper use and care of tires, a poster entitled, "Tire Inflation Pressures—1929 Model Cars" has just been issued. The chart gives recommended inflation pressures for front and rear tires for current models.

United States Rubber Company Makes Many Executive Changes

AS A first step in his new duties as vice-president of the United States Rubber Company in charge of all tire activities, L. D. Tompkins has announced several organization changes in the tire division of the company. Sheldon P. Thacher has been appointed general manager of tire production and George S. Shugart, second vice-president, has been assigned to act in a consulting capacity to Mr. Tompkins and the sales staff.

S. P. THACHER

Mr. Thacher has been assigned broader responsibilities than have been his as a second vice-president in charge of tire manufacture. He has been with the company 19 years and was one of the first men with special technical training in rubber when he came to the organization after studying at Yale University and the Massachusetts Institute of Technology. He has been in charge of tire manufacturing activities since January 13, 1927.

Mr. Shugart will serve in a consulting capacity on important selling policies. He has been connected with the company for 32 years, having begun with Morgan & Wright in the days when only bicycle tires were made. His previous service has included work as salesman, branch manager, western manager, general branch sales manager and general sales manager.

G. S. SHUGART

Arthur B. Fennell, formerly general manager of U. S. tire sales, has been assigned to the newly created position of manager of tire dealer relations. He has been with the company 18 years. M. Glenn O'Harra, manager of G. & J. tire sales, has been appointed to act as manager of branch sales while continuing his former work. Mr. O'Harra has been connected with the company 23 years.

Other appointments include those of William V. Logan, manager of government and industrial tire sales; C. K. Whidden, manager of truck and bus tire sales; L. M. Simpson, assistant to Mr. Tompkins; and R. E. Sheahan, manager of manufacturers' tire sales with headquarters at Detroit, Mich. Special duties in connection with tire sales to auto manufacturers and field contacts will be assigned in the future to C. J. Butler, president, Morgan & Wright; W. B. Harding, president, G & J Tire Company; C. B. Whittelsey, vice-president, Hartford Rubber Works Company; C. J. Welch and T. R. Burton, special representatives on U. S. tire sales.

New York Group Holds Enthusiastic Meeting

Over 250 Members Attend Meeting on March 20 to Hear Papers on Stearic Acid—Songs Liven Up the Meeting

THE most successful and enthusiastic meeting of the New York Group of the Rubber Division, A. C. S., was held on the evening of March 20, at the Town Hall Club, New York City. The meeting, which was preceded by a dinner, was attended by about 250 group members and their guests and included a number of well-known out-of-town group members.

The evening was given over to a symposium on Stearic Acid and its use in the rubber industry. A total of eight prepared papers were read and the evening ended with a brief general discussion. Humorous songs appropriate to the occasion and composed by "Bill" Whitcomb, of the United States Rubber Company, were rendered by the Manhattan Agonizers and sung in chorus by the gathering.

Credit for the comprehensive planning of the symposium and the success of the meeting must go to the Chairman of the New York Group, W. B. Wiegand, of Binney and Smith Company.

Abstracts of Papers

In the course of the papers delivered the complete history of the manufacture and application of stearic acid in its relation to the rubber industry was covered from every angle. W. F. RUSSELL, of the Norwalk Tire and Rubber Company spoke on "Early Experiments with Stearic Acid." Early experience with stearic acid which preceded his patent on the use of this material in rubber were related by the speaker. He found that the fatty acids, as oleic and stearic, were of value in rubber compounding for they overcame some of the variable curing properties of different grades of crude rubber. The higher members of the fatty acid were found to be better than the lower members.

D. F. CRANOR, of Binney and Smnth Company, speaking on "The Nature, Manufacture and General Uses of Stearic Acid," reviewed the occurrence of stearic acid in nature and the gradings of commercial grades according to process of manufacture. The sales trend showed a large increase in consumption since 1926. In 1928 over 41,000,000 pounds of stearic were produced, this being only 40% of the capacity of the producing industry. Of this total 30% or about 12,000,000 pounds is used in rubber. The talk was concluded with a short review of the uses of stearic as a softener, dispersing agent and a material to facilitate processing.

R. P. DINSMORE, Goodyear Tire and Rubber Company, spoke on "The Effects of Stearic Acid on Organic Accelerators." He stated that while stearic acid is a constituent of crude rubber, this fact has only recently been appreciated by rubber chemists. A comparison between stearic and oleic was given as was the behavior of stearic in compounds with and without an accelerator. Tests were made with three stocks, a tread stock and two friction stocks, one of which contained Captax.

E. W. FULLER, of the Fisk Rubber Company, read a paper on "The Effect of Stearic Acid on Various Crude Rubbers" and suggested that consideration be given to the various grades of crude rubber when stearic is used with them. Extended tests were conducted on the acid contents of rubber so that the effects of the acid should not be lost sight of in compounding. Slides were used to show the physical properties of control stocks with and without stearic, using both high and low grade rubbers.

J. T. BLAKE, of the Simplex Wire and Cable Company, gave a talk on "Some Theoretical Aspects of the Wetting Action of Stearic Acid." His paper described results of tests made by electrical methods on adsorption and desorption. The heat of wetting carbon by rubber and stearic acid was found and checked with existing standards.

H. A. WINKELMANN, of the Philadelphia Rubber Works Company, spoke on "The Use of Stearic Acid in the Reclaimed Rubber Industry." In the course of his paper, numerous slides were used to show the effect of stearic acid on the physical properties of reclaims in which varying amounts of carbon black and stearic were used. The stearic was tested in digesters as an activator, after removal of the stock from the devulcanizer and in compounds containing reclaimed rubber.

J. R. SHEPPARD, of the Eagle-Picher Company, discussed the subject of "Stearic Acid in Litharge Compounds," in which he reviewed tests made in 1912, those of Stevens in 1916 and Bedford and Winkelmann in 1924 on litharge stocks. Experiments on low grade rubbers in stocks with different softening agents and 20 parts of litharge showed that tensiles varied from 1625 to 2800 according to the character of the softener used.

C. O. NORTH, of the Rubber Service Laboratories, spoke on "The Effects of Progressive Additions of Stearic Acid on the Abrasive Index" and brought out the interesting fact that tests made to determine the abrasive index of tread stocks containing from 1½ to 30% stearic acid gave such varying results that no specific conclusions were reached as to whether or not stearic aided abrasion. Later tests using paraffin instead of stearic did not help to solve the problem for in some cases paraffin was found to be superior to stearic.

Discussion

To a question as to whether stearic acid improves abrasion on the road, Dr. North replied that according to his experiments 2% of stearic would improve abrasion but above that he had no additional confirming knowledge.

When called upon for remarks, C. R. Boggs told of the use of stearic acid in insulated wire stocks and attributed its use in such compounds to its dispersing, activating and tubing qualities. Carbon black is little used in insulated wire on account of its electrical conductivity, clay being a more suitable material except for its lack of reinforcing properties. A desire for a special material for use in insulated wire was voiced by the speaker.

An experience with a belt cover stock which bloomed was related by K. J. Soule of the Manhattan Rubber Mfg. Co., in which it was found that the addition of 1½ per cent of stearic acid took away all blooming tendencies and improved the stock.

The effect of ageing of the oleic content of stearic acid was a point which N. A. Shepard of Firestone Tire & Rubber Company believed should be considered in drawing up stearic specifications.

In answer to a question by C. R. Boggs as to why single instead of double pressed stearic acid is used, D. F. Cranor explained that it was largely a matter of price, the single pressed grade doing the work properly at the lowest price.

The use of stearic as far back as 1912 by U. S. Rubber Company and since 1905 by Hood Rubber Company was mentioned by W. E. Glancy as the concluding statement of the meeting.

One of the aftermaths of the meeting which attracted a large number of the members and guests took place on lower Fifth Avenue where the long awaited duel with deadly weapons between Fred Batchellor and Bill Whitcomb took place. At last accounts the seconds of each duelist were still examining and testing the weapons and the duel will be undoubtedly held over until the next meeting of the New York Group.

Crude Rubber Deflation in 1928 Made Profits Lowest in Years

Average of "Big Five" Companies' Net Incomes Was Less Than One Per Cent of Sales, While Only Goodyear Showed a Gain in the Dollar Value of Consolidated Sales for the Year

RESULTS of careful management as well as the drastic effects of the unexpected deflation in crude rubber values are apparent in the financial statements of the leading rubber companies for the year just past. Despite the sudden drop in price quotations on the crude commodity, two of the five largest rubber manufacturing companies showed profits for 1928 amounting to approximately 5 per cent of their total sales and a third ended the year with a net income equal to 2.4 per cent of consolidated sales.

The violent collapse in crude rubber prices, however, had its effect on the operations of the "Big Five" as a whole, cutting their profits down to one twenty-eighth of what they had been in 1927. As a group these manufacturers showed total net profits of only $1,840,375 last year as against $52,047,711 during the previous twelve months.

The percentage relationship of profits to sales was .2 per cent as compared with 6.7 per cent for 1927 and 6.8 per cent for the three years from 1925 through 1927. Gross sales of the entire "Big Five" were higher than in 1927, but this increase was due only to the large gains made by a single company. The Goodyear Tire & Rubber Company's consolidated net sales were higher by $28,590,668 than in 1927, but the aggregate sales of the other four manufacturers last year was $16,344,860 less than during the year previous.

Gross Sales Compared With Profits

The accompanying table shows the relation of gross sales to profits for each of these five companies. The profits listed are those remaining after interest, taxes, depreciation of plant and equipment, adjustments of inventories and other charges have been deducted, but before preferred dividends have been met, and include any reserve which may have been set aside. The table gives the same figures for the last three years by way of comparison.

The gross sales of the "Big Five" during 1928 totaled $779,653,014 or more than 65 per cent of the $1,195,423,900 which the Rubber Association of America, Inc., estimates as the grand total sales value of all rubber goods shipped from American factories last year. These figures from the financial statements of these companies, therefore, are fairly representative of the general condition of the industry in the United States.

The total gross sales and profits of the individual companies for the last three years show the relative position of the separate companies at the end of the three-year period and give a broader view of their operations. In the matter of sales volume Goodyear has surpassed all the others and also shows the highest aggregate profits for the period. The Firestone Tire & Rubber Company has made the best record from the standpoint of percentage relationship between earnings and gross sales. However, the average profits for the three-year period for all tire companies is only 3.7 per cent, a figure which in itself would indicate that the industry is in a none too prosperous condition. But the fact that all inventory and other losses have been written off the companies' books and the adjustments made in several of the consolidated balance sheets place the industry in a sound financial position for the current year and future years in which artificial inflation of rubber values through restriction of exports will no longer be a factor.

Unit Sales Establish Record

Unit sales of tires were greater during 1928 for all manufacturers, and other rubber goods sales gained volume in proportion. Plant expansions and the establishment of branch factories were features of the year, but heavy cuts in selling prices resulted in the failure to set a new record for the dollar value of gross sales.

Goodyear's earnings after preferred dividend requirements amounted to $7.31 a share on the common stock outstanding at the close of 1928, equal to a rate of about 5 per cent on the current price in the neighborhood of $147. Firestone, however, earned $14.66 a share on its common after preferred dividends, equivalent to a rate of 5½ per cent on the present price of $271. The earnings of the B. F. Goodrich Company were equal to only $1.50 a share

SALES AND PROFITS OF THE FIVE LARGEST RUBBER MANUFACTURING COMPANIES
(Profits shown are after interest and other charges, but before preferred dividends or reserves)

	1926			1927			1928			Three Year Total		
Company	Gross Sales	Profits**	Per Cent	Gross Sales	Profits**	Per Cent	Gross Sales	Profits**	Per Cent	Gross Sales	Profits	Per Cent
U. S. Rubber	$215,528,309	$8,761,869¶	4.1	$193,442,945	$ 6,232,052¶¶	3.2	$193,480,121‡	$10,781,254†	....	$602,451,375	$ 4,212,667	.7
Goodyear	230,161,536	8,799,138	3.8	222,178,540	16,635,666	7.4	250,769,208	10,827,843	4.3	703,109,284	36,262,647	5.2
Goodrich	148,391,478	5,065,110	3.5	151,684,960	12,780,306	8.4	148,805,178	3,513,023	2.4	448,881,516	21,358,439	4.8
Firestone*	144,397,000	7,622,339	5.3	127,696,759	13,780,966	10.8	125,664,666	7,072,014	5.6	397,758,425	28,475,319	7.2
Fisk*	68,051,739	3,354,431	4.8	72,404,002x	2,620,721	3.6	60,933,841	8,791,251†	..	201,389,582	2,816,099†	..
Total	806,530,062	33,602,887	4.2	767,407,206	52,047,711	6.7	779,653,014	1,840,375	.2	2,353,590,182	87,492,973	3.7

*Firestone fiscal year ends October 31. Fisk fiscal year ended October 31 until 1927, when it was changed to correspond with calendar year. **Without deduction of reserves taken into income account. ¶Does not include $6,000,000 profit from plantations. ¶¶Does not include $4,000,000 profit from plantations. xCovers 14 months due to change in fiscal year. †Loss. ‡Includes operations of Winnsboro Mills, Beacon Falls Shoe Company and Rubber Regenerating Company, Ltd., previously carried as investments.

on the common stock after deducting all charges.

In unit sales of tires, Goodyear showed an increase of more than 32 per cent over 1927, a gain exceeding any accomplishment of the company in recent years. The net shown for the company does not include $2,500,000 appropriated from $6,500,000 of special reserves created out of profits in previous years in anticipation of abnormal fluctuations in raw material prices. After making book adjustments during the year, asset ratios have been brought up to the point where the company can begin to pay dividends on the common stock. The valuation of goodwill and patents was written down from $10,209,275 to the nominal amount of $1 out of surplus arising from appreciation in value of properties, and other important changes were made in the consolidated balance sheet to create a firmer financial position.

The Firestone company ended the year with a surplus of $53,087,352 as against a surplus at the end of 1927 of $50,131,826. The net profits shown were figured after heavy expenditures for the development of the company's plantation project in Liberia as well as all losses on rubber commitments and crude rubber agency operations in excess of the reserve for general contingencies

Goodrich Shows Big Drop From 1927

After payment of the regular dividends amounting to $4 a year on the common stock, Goodrich showed a deficit for 1928 operations of $1,831,411. The year's earnings of $1.50 a share on the common compare with earnings of $15.44 a share in 1927 after preferred dividends and after setting aside $1,000,000 as a reserve for contingencies. The net income for the last six months of 1928 was in excess of $5,000,000, but this was cut down by the loss for the first half of the year occasioned by the sharp reduction in the inventory value of crude rubber on hand or contracted for. At present Goodrich is earning in excess of $900,000 a month, and it is predicted that 1929 profits will be nearly equal to those of 1927.

Sales of the United States Rubber Company last year show a gain in the accompanying table, but this figure includes the operations of three subsidiaries hertoefore carried as investments. If these were included in the previous year's statement, the consolidated sales for 1927 would total $198,089,015 as compared with $193,480,121 in 1928, showing a decrease of 2.3 per cent in the latter year.

The United States Rubber Company has set up a reserve of $10,000,000 out of its surplus to provide for the disposition of factories already shut down or about to be shut down. This is regarded as the forerunner of a program calling for consolidation and centralization of manufacturing facilities under the new management which may effect considerable economies in the future and increase the company's earning capacity. Even with poor footwear sales and price reductions on all lines, the company had a net profit of $4,193,658 for its operations in the second half of the year.

Fisk Improves Capital Structure

Although the Fisk Rubber Company has been the only one of the "Big Five" to show a loss for its operations over the full three-year period, its outlook for 1929 is considerably improved. In addition to having booked a record-breaking original equipment business for automobile tires, it is taking steps to improve its capital structure by the sale of 100 per cent additional common at $11 a share. Raising of $8,500,000 additional funds will provide a working capital of approximately $31,000,000, or over 50 cents for each dollar of 1928 sales.

Among the smaller companies, General Tire & Rubber showed a profit of $2,002,000 and Mohawk Rubber of $766,040. The India Tire & Rubber Company had a profit of approximately $65,000, against which charges of $313,000 were made to cover adjustment of inventories and other charge-offs. The Miller Rubber Company showed a loss of $3,434,901, the Kelly-Springfield Tire Company a loss of $2,490,512, and the Hood Rubber Company a loss of $1,478,104. As in the case of the larger companies, however, all showed themselves by completely writing off losses and strengthening their capital to be in an improved financial position for the current year.

Three Million in Three Days

By H. R. BAKER

Advertising Manager, Miller Rubber Company

THREE million dollars was the total of the advertising propositions of reasonable merit proposed in three days this week during which I kept record. And few of these were "fly-by-night" schemes, nor was there anything absurd about them. In almost every instance the salesmen were high-grade men representing standard and well-known companies. In the cases referred to each man honestly believed in the advertising he was selling.

Involved in the $3,000,000 worth of advertising which was proposed were all the well known varieties—magazines great and small, trade papers, newspapers, posters and billboards, radio, motion picture, dealer identification, neon signs, aerial advertising, direct mail and window displays. These men as company guests were entitled to a fair hearing and they got it.

It was a difficult position in which to place both buyer and seller. The company's budget could easily have been over-expended on apparently sound advertising. Many arguments were advanced. It really became a choice not between the good and the bad but between the good, the better and the best for our needs.

On the assumption that only that advertising is good advertising which produces business at a profit and that advertising may not expend beyond a reasonable percentage of the present business and the volume to be obtained, purchase of any considerable amount of the proposed advertising was impossible.

In so intensive and competitive a selling, and disregarding the reasonable assumption that the advertising dollar must be penalized by excessive sales costs, the advertising manager was placed in a very unenviable position. The answer of necessity was almost invariably "no." And yet these men whose hopes were dashed were usually good losers—they took their "No" with proper spirit, and made easier a job that might otherwise have been difficult, to say the least. It was no easy matter to tell them the entire truth about their prospects, with a friendly and man-to-man spirit.

Our hats off to the advertising representatives who understand and do not force beyond reason an issue that can only lead to useless discussion. It's a clean cut business, this advertising, and it's a hard master with its everlasting "noes" and infrequent "yeses" when good business can give no other answer. There is no place for maudlin sympathy for oneself—though sometimes I do feel sorrier for the advertising man who listens and must refuse than for the representative who has put his all in the solicitation and failed through no fault of his own.

And while the three days experience listed may be somewhat exceptional in dollars involved, it is so only relatively, as advertising propositions involving staggering totals are presented continually. Of course it's a question of selective buying but on what a grand scale!

Some Causes *for* Service Failures *in* Rubber Goods

Definite Factors Causing Complaints Against Rubber Products Have Been Determined and Progress Is Being Constantly Made by the Manufacturing Industry Toward Their Elimination

A BUSINESS transaction is commonly regarded as complete when the merchandise has been delivered and payment made, but there is a further angle to the problem which is too often overlooked. The merchant who has bought the merchandise must in turn sell it to the consumer for consideration and the final responsibility does not cease until the goods have given good service. Failure to give service not only creates consumer dissatisfaction but involves a monetary loss to manufacturer, wholesaler, and dealer as well.

If progress in rubber chemistry and manufacturing has accomplished any one feat which is outstanding during the last ten or fifteen years, it is in the improved quality of the merchandise. But here again, as in many other things, perfection has not yet been achieved, however marked the improvement. There have been some wholesale service failures in rubber as there have been in other products, yet fortunately most of them are history and need no recounting. Probably today the percentage of rubber goods of all kinds which fail to give the service expected of them is less than one per cent. But however small it is, it will always be an important problem for research to tussle with because with every monetary loss of a failure goes a still greater loss of consumer good-will which is immeasureable.

Ordinary Customer Abuse a Factor

In setting up standards of service which rubber goods can be reasonably expected to give, we are confronted with consumer abuse of the product which will always be present as long as the human equation exists. Probably the tire and tube division of the industry has this to contend with more than any other, owing to the pernicious practice of mileage guarantees which grew up in the early days of the industry, but which has now been changed due to concerted efforts by the Rubber Association of America and the Rubber Institute. Common tire failures today are fast tread wear, cracking of treads, sidewall blow-out, and separation of the bead particularly in large size pneumatics. Carcass separation and rim-cutting at the bead, which were on the list several years ago, are practically unknown today due to improved impregnation of cord fabric, tougher friction stocks, and better vulcanizing. Rim-cutting has disappeared with the incorporation of the bead as an integral part of the tire and improved rims.

Modern driving conditions, fast stopping and starting, and the balloon type of tire have made the problem of tread wear a more difficult one, but the carbon black tread, properly compounded with up-to-date accelerators, has met these new conditions adequately. Blow-out in the sidewall has decreased considerably since the large-sized balloons have been made six-ply instead of four-ply, and in many cases severe stone bruise has caused this type of failure. This is one of the hardest adjustments to make, the usual test being a break from the inside is the fault of the manufacturer, from the outside the fault of the motorist.

Six- to ten-inch truck and bus pneumatics presented a real problem when they were first put out as manufacturers soon discovered that the same type of bead construction which had been successful in passenger tires was not suitable for the giant pneumatics. The tremendous weight and strain of the load which these tires carry often caused the bead to loosen up. This trouble was overcome by better cements and friction stocks, careful designing of the mold and airbag to insure adequate pressure at the bead during vulcanization, and a different arrangement of the plies of chafing strip.

Tubes Now Outlasting Casings

Second only to the tire is its companion product, the inner tube which has seen marked improvement in quality during the last two years. Analysis of the 1928 Rubber Association figures show that while tire sales dropped slightly over two million dollars in value over 1927, less than a quarter of one per cent, tube sales dropped nearly five million dollars, almost four per cent. In fact, many inner tubes today are outlasting the casings. Still greater progress is seen in the development of the latex tube. Molded tubes are eliminating many of the old splice troubles, and better cures and acceleration are making tougher stocks, less subject to tearing and puncture.

Rubber footwear is a product which is subject to considerable consumer abuse of a different nature than the tire, and more diversified, which makes the corrective steps more difficult. True, many of the lightweight numbers are worn only occasionally, but on the other hand, we have work rubbers and boots worn by railroad and mine workers which get tough service, and athletic shoes for basketball and tennis which get a rigorous test every time they are worn. More general use of the pressure cure in footwear has improved the product immensely, as the old air chamber cure had a tendency to make the goods porous. It has also improved the adhesions between the plies of fabric, an advance in quality which will proceed still further as rubber footwear chemists incorporate some of the excellent accelerators and toughenners now on the market.

Wear of the sole is a problem which has to be solved partly by design of the roll, giving extra thickness at the heel and ball of the foot, and partly by skillful compounding. The sole of a tennis shoe requires a different type of compound than that of a light rubber, for example, as the former conforms to the foot and receives a wearing test similar to that of a leather shoe, while the latter is worn over a leather shoe and has a stiff inside support. Lightweight sporting boots must be built light and tough to guard against "snagging." Cements are very important and with them goes the ever present problem of proper ap-

plication by hand labor. Considerable research in textiles is also necessary to obtain the proper construction of canvas upper for the tennis shoe to resist suffing and abrasion and to balance the wear with the sole. If the sole outwears the upper, the shoe is liable to come back for adjustment even if the service has attained the reasonable expectation.

Making overshoes waterproof is a new problem since the use of so many cotton fabrics in place of wool. Wool, being an animal product, is naturally water-repellant, but cotton is absorbent. Different types of dyes used in the finishing react in various ways to water and moisture. Sizings used in the yarns resist water but these are often entirely removed in finishing. Stock and skein dyed yarns are apt to be more absorbent than piece dyed goods.

Danger in Both Under- and Over-Curing

Owing to the nature of the vulcanization process peculiar to footwear, extra care must be taken in controlling the cure, as undercuring will cause "bloom," a constant cause for consumer dissatisfaction owing to the appearance. On the other hand, overcuring will cause failure in service.

It will probably be several years before we know how much additional consumer satisfaction has been created by the use of anti-oxidants, but no one will deny that this development has been the most outstanding contribution of rubber chemists to eliminate service failures.

No rubber product is immune from the service failure hazard. Even so small an article as the rubber elastic band has occupied the attention of the research laboratories. Not so many years ago in one of the government bureaus at Washington a vault was opened containing some valuable documents which had been classified in individual packets tied together with rubber bands. The bands were of inferior quality and had crumbled away, making the entire lot of records a jumbled mass. Here is a place where the anti-oxidant will perform a valiant service.

It is not always the cheap compound which makes for failure in rubber goods; more often it is the most expensive. Rubber heels and soles call for the skillful blending of chemicals with reclaimed and crude rubber to give a product which is flexible, resilient, with good abrasive qualities, and non-cracking. The government at Washington is becoming aware of the fact that many of its specifications on rubber belting and hose are out-of-date, and that better products can be made at less cost.

Automobile topping is another rubber product which the rubber technologists are constantly improving. Here resistance to cracking and the heat of the sun are the qualities demanded. Reclaim is used generously in these compounds, not on account of its cheapness, but because it gives a better performance than the all crude compound. Insulated wire has been made a vastly improved product as the result of skilled chemical research, and probably in no other rubber product is the service failure factor so important. Here again reclaim forms an integral and important part of the compound, which proves that the most costly material is not always the best.

Rubber manufacturers today are realizing more than ever that to build the best is the cheapest in the end. For the product which yields dividends in the form of consumer satisfaction is building for itself future business which no amount of price cutting can take away.

Chemical Exposition to Draw Rubber Men

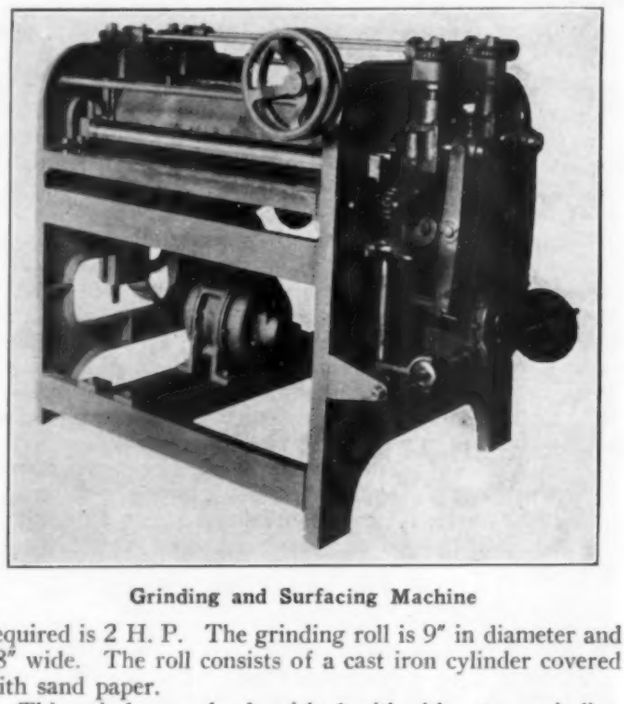
THE manufacturers of rubber products will find much that will be of importance to their particular problems on display in the way of machinery and equipment at the Twelfth Exposition of the Chemical Industries, to be held at the Grand Central Palace, New York City, during the week of May 6th. The changes in this industry during the past quarter of a century have been one of the outstanding developments in the science of chemistry and chemical engineering, and the importance of such exhibits should draw many of the leaders in this field from both the executive and technical staffs of the rubber industry.

The Chemical Industries Banquet which has become an important function of Exposition Week will again be held on Thursday evening, May 9th, under the auspices of some fifteen to twenty chemical and chemical industry associations and societies, directed by the Salesmen's Association of the American Chemical Industry.

Grinding and Surfacing Machine

A NEW machine for grinding and surfacing slabs of rubber is being offered by the Standard Machinery Company, Mystic, Conn. At first designed and built solely for a company manufacturing rubber flooring, this grinder proved so satisfactory for surfacing rubber slabs that the Standard company decided to put it on the market.

The machine is arranged with brackets for an individual motor drive, directly geared to the drive shaft. The power



Grinding and Surfacing Machine

required is 2 H. P. The grinding roll is 9" in diameter and 38" wide. The roll consists of a cast iron cylinder covered with sand paper.

This grinder can be furnished with either two grinding cylinders or one grinding cylinder and a brushing roll. The brushing roll can be used to remove the grindings from the surface of the slab, or in case of rubber textile composition, it can be used to put a knap of textile on the rubber surface. The two rolls rotate at a high speed and also oscillate ¾: so that a very smooth surface can be given to the rubber. The rubber slab is fed through feed rolls under the grinding and brushing roll. The two rolls are adjusted by two hand wheels which are shown on the front of the machine. These hand wheels, through a series of shafts and worm gears, adjust the roll to the correct thickness of the rubber slabs. The adjustment can be made up to ¾". This adjustment is very fine and the slabs can be ground to a few thousandths of the thickness desired.

There are three pairs of feed rolls; one pair in the center, and the others front and back of the grinding rolls. These feed rolls are driven by power by means of a sprocket chain drive shown on the right hand side of the machine. The speed of these feed rolls is regulated by a friction disc. In this way, the fastest speed can be adjusted to thoroughly grind the rubber without causing undue friction on the surface.

Canadian Rubber Trade Makes Great Strides in 1928

Exports of Rubber Products Increase 10 Per Cent During 1928—Total Production of Automobile Casings and Tubes Exceeds All Previous Records—Total Output of Canadian Industry Reached $100,000,000 in Value

CANADIAN exports of rubber products for 1928 increased by 10 per cent over those of 1927, while imports increased by only 4 per cent, according to the reports of the Department of Commerce. Exports for 1928 were valued at $30,429,500, while imports were valued at $5,412,000, leaving a favorable balance of $25,017,500, as compared with $22,723,600 in 1927 and $21,118,100 in 1926, showing that in recent years Canada has become more and more self-contained in the consumption of rubber goods.

Although the production of 1928 is not available at present, it is believed to have reached the $100,000,000 mark in value of finished goods, as against $91,414,000 in 1927 and $86,508,000 for 1926. The percentage of exports is also high—being 30.5 per cent of the production for both 1926 and 1927—while the figure in the United States is around 5 per cent.

The rubber manufacturing industry of Canada is centered in 44 establishments, of which 29 are located in the Province of Ontario, 13 in Quebec, and 2 in British Columbia. A review of the Canadian rubber manufacturing industry appeared in THE RUBBER AGE of November 10, 1927. The capital invested, however, is for the most part United States, through subsidiaries of well-known plants established in the States.

Canada maintains a favorable trade balance in all groups except the miscellaneous class, which denotes a difference of $2,986,000 in 1928 against 1927.

Canadian exports of automotive rubber goods in 1928 were valued at $19,708,392—a decrease of nearly 4 per cent as compared with 1927. All items declined in both volume and value, the most potential being one of 1.5 per cent in value of pneumatic tires and one of 17 per cent in value of inner tubes.

Output of Casings Breaks All Records

Canada, in 1928, produced 4,333,000 automotive casings, being a record year for the industry. Exports totaled 1,674,553 casings, making Canada third in world trade, but the figure shows a slight decline from the exports of 1,679,126 for 1927. Thirty-six per cent of the volume in 1928 went to Empire markets against 62 per cent in 1927. Thus, Canada is extending its tire trade to non-British areas—especially in South America. Argentina, the second best market in 1928, increased its takings by 54 per cent, and Brazil, the fifth market, 41 per cent. Since the United Kingdom reached self-sufficiency in automobile tires during 1928 and thus deprived Canada of its best outlet, New Zealand is now the principal market, benefiting by the preferential tariff granted British countries.

Canada, especially during 1928, so increased its exports of rubber footwear that it now ranks second as the world's greatest supplier, only slightly below the United States. Exports of rubber footwear in 1928 equaled 9,422,541 pairs, valued at $8,601,868—an increase of 42 per cent in volume and 51 per cent in value as compared with 1927. Seventy-eight per cent of the total volume comprises canvas rubber-soled shoes, in which Canada in 1927 became the world's largest supplier and which was maintained throughout 1928 by a wide margin.

Canada is also extending its markets in canvas rubber-soled shoes southward. Besides the various British West

Canadian Trade in Rubber Products

Imports

Item	1927 Quantity	1927 Value	1928 Quantity	1928 Value
Automotive rubber goods:				
Bicycle tires ..... number	22,711	$11,899	20,275	$10,673
Solid tires ..... do	491	15,826	721	17,932
Automotive casings ....do	23,331	280,455	21,352	230,535
Automotive inner tubes..do	44,144	88,711	32,963	49,276
Solid tires, n. e. s.		12,047		21,382
Total		408,938		329,798
Rubber footwear:				
Boots and shoes .....pairs	110,488	202,801	181,011	229,553
Canvas rubber-soled shoes .....do				
Total		202,801		229,553
Mechanical rubber goods:				
Rubber hose		172,732		228,624
Rubber belting .....pounds		130,989		184,010
Rubber packing		52,901		62,751
Total		356,622		475,385
Miscellaneous rubber goods:				
Hard rubber in sheets ..... pounds	204,781	$89,870	136,793	$54,639
Hard rubber in tubes		12,620		15,778
Rubber thread .....pounds	220,584	287,118	227,489	251,948
Scrap rubber .....do	8,229,350	517,573	8,535,249	369,942
Reclaimed rubber .....do	9,747,971	974,229	11,990,058	1,149,235
Rubber cement		88,853		78,014
Elastic		188,779		32,207
Rubber gloves		18,236		19,581
Golf balls .....dozen	47,547	192,660	30,663	117,653
Rubber heels .....pairs	900,432	52,849	1,537,056	95,720
Water bottles		27,104		31,235
Mats and matting		31,291		122,790
Rubber clothing		482,461		576,566
Rubber manufacture, n. e. s.		1,278,420		1,461,988
Total		4,242,063		4,377,296
GRAND TOTAL		$5,210,424		$5,412,032

Exports

Item	1927 Quantity	1927 Value	1928 Quantity	1928 Value
Automotive rubber goods:				
Bicycle tires .....number	6,868	$6,885	4,777	$5,145
Solid tires .....do	14,473	438,926	12,596	361,547
Automotive casings ....do	1,679,126	16,913,065	1,674,553	16,735,971
Automotive inner tubes do	1,796,619	3,143,901	1,555,085	2,605,729
Total		20,502,777		19,708,392
Rubber footwear:				
Boots and shoes .....pairs	1,178,884	1,865,672	2,046,081	3,509,660
Canvas rubber-soled shoes .....pairs	5,491,164	3,835,443	7,376,460	5,092,208
Total		5,701,115		8,601,868
Mechanical rubber goods:				
Rubber hose		256,696		257,116
Rubber belting .....pounds	1,226,609	500,935	1,225,294	470,902
Total		757,631		728,018
Miscellaneous rubber goods:				
Rubber clothing		24,164		28,759
Rubber manufactures, n. e. s.		748,491		1,362,468
Total		772,655		1,391,227
GRAND TOTAL		$27,734,178		$30,429,505

Indian markets, all of which manifested gains in 1928, Argentina increased its purchases by 42 per cent in volume over 1927, Chile by 28 per cent, and Colombia by 162 per cent. The latter three countries were formerly important

Canadian Exports of Automobile Casings

Country of destination	1927		1928	
	Quantity	Value	Quantity	Value
New Zealand	180,015	$2,231,430	209,551	$2,304,394
Argentina	112,386	981,263	172,610	1,325,917
South Africa	127,617	1,400,346	153,204	1,392,450
British India	117,681	1,090,734	147,479	1,344,699
Brazil	99,325	897,498	139,927	1,172,379
United Kingdom	401,281	4,035,468	136,767	1,508,322
Japan	19,985	197,242	50,136	604,336
Czechoslovakia	25,835	342,272	46,149	710,580
Netherlands	28,844	313,387	45,131	548,417
Denmark	66,164	501,896	43,718	364,541
Other countries	499,993	4,921,529	529,881	5,459,936
TOTAL	1,679,126	$16,913,065	1,674,553	$16,735,971

United States markets, but Canada in 1928 shipped to Argentina more than four times as many pairs of canvas rubber-soled shoes as the United States. Fifty per cent of the Canadian exports goes to Empire market, the ratio being constant for both 1927 and 1928.

Though the Canadian rubber factories engaged in the manufacture of druggists' rubber sundries have made remarkable progress in recent years, the Dominion is still required to import certain quantities of rubber gloves, water bottles, mats, matting, and other articles. Of particular note is the increase of 81 per cent in the imports of rubber heels, most of which come from the United States.

Floodlights for Factories

A NEW line of floodlighting projectors, designed particularly for factories, power plants and stores, has been announced by the General Electric Company, and will be of interest to managers of factories, office buildings and stores. The projectors have non-ferrous, and hence non-rusting, casings. The glass reflectors and lamps are enclosed so that dust and dirt cannot enter or impair efficiencies. Ease and accuracy in focusing are attained through the use of unique universal focusing mechanisms. A small three-point base design and swivel give simple and economical mounting, with ease of installation and orientation of the floodlight beam.

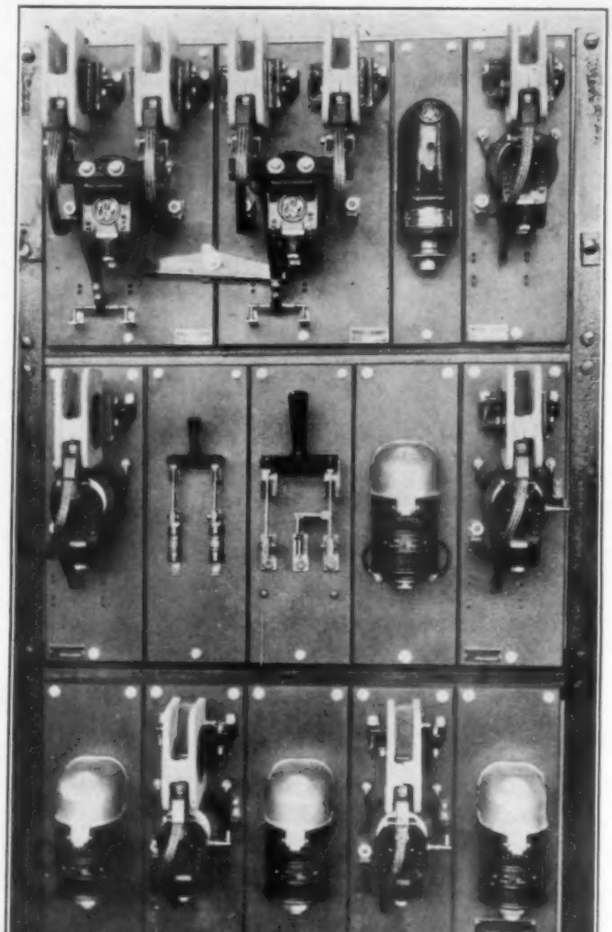
The projectors are built with a formed, single-piece sheet copper casing and a single-piece door of the same material. The rear of the casing is hemispherical, and is provided with a clearance hole for the socket-holder rod of bronze which is part of the focusing mechanism. The lens is held loosely within the door by means of four punched clips, in accordance with automobile headlight practice. The reflectors are supported by means of punched supports and screw clamps, fitted with asbestos cushions to prevent breakage. The focusing mechanism is universally adjustable, consisting of a clamping chuck or collett similar to that used on lathes.

Two sizes of lenses are available, the clear lenses with plain, lightly stippled, heavily stippled and spreadlight distribution. For projectors equipped with clear lenses, color plates of red, amber, blue or green are available. Where projectors are mounted close to the base of the surface to be illuminated, most efficient illumination is afforded by the combination of a new asymmetric reflector and spreadlight lens. The reflectors are of silver-plated glass, protected by copper backing. Reflectors of the same size are interchangeable in any of the projectors.

Time-Current Control

A NEW system of magnetic contactor control for direct current motors is now being manufactured by the Electric Controller & Manufacturing Co., Cleveland, O. It is well adapted for use on calenders, tread calenders, warming mills, and tube machines.

When working warm stock, where fast operation means



Magnetic Contactor Control System

greater production, Time-Current Control produces the maximum output. However, when breaking down cold stock, longer time up to a maximum of 2 seconds per step is had automatically and without any change of adjustment.

Time-Current Control uses a simple acceleration relay having remarkable operating characteristics. It also employs a new plugging relay and a complete new line of shunt contactors equipped with bushed or ball bearings.

Akron University Chemical Club

W. F. ZIMMERLI, rubber technologist with Roessler and Hasslacher Chemical Company, New York, N. Y., addressed the Chemical Club of Akron University on March 15, on "Chemistry in Rubber." It is interesting to note in this connection that Dr. Zimmerli founded the Chemistry Club of Akron in 1914.

The production of Hevea rubber in the Netherland East Indies in 1928 is provisionally estimated officially at approximately 224,000 tons of dry rubber.

Display of Miscellaneous Mechanical Rubber Products

Photo by Courtesy of U. S. Rubber Company

Determining Changes *in* Design *in* Mechanical Goods and Tires

Introduction of New Machinery and New Industrial Uses for Rubber Are Continually Forcing Changes in Mechanical Goods—Tire Designs Largely Dependent on Automobile Construction

THAT definite factors enter into the changes in design and construction of mechanical rubber goods and tires is shown by a recent study made by the Policyholders Service Bureau of the Metropolitan Life Insurance Company. The results of the investigation have been published in brochure form by the Bureau.

A similar study of the determination of style and design in rubber footwear, also made by the Bureau, was the subject of an article in THE RUBBER AGE of November 25, 1928.

The present survey on mechanical goods and tires took the form of a questionnaire addressed to leading manufacturers. The following is the reply to the questions from one of the most prominent producers in the industry.

1. **Question:—What factors determine the new styles and designs you adopt?**

   Answer:—Mechanical Goods:

   (a) Competition in market and prices.
   (b) Development of new uses for rubber products—(Economic reasons for substituting rubber).
   (c) Increased engineering efficiency of our own product (Serviceability).
   (d) Increased engineering efficiency in the use of our products—(Mechanical progress in other industries).

   Tires:

   In designing new tires, our first thought is the service our products are required to give. The only time that tires are designed for any other purpose, is, perhaps, when required by automobile companies, as the smaller rim diameter, etc.

2. **Question:—Will you indicate which of the following sources have a part in originating new styles and designs, and describe the procedure you follow.**

   Answer:—Mechanical Goods:

   (a) Own designer. Our own designs—considerable part, as related to questions 1-a, b, c, and d.
   (b) Free-lance designer—a small part, as related to question 1-b.
   (c) United States or abroad—95 per cent U. S. A.
   (d) Salesmen—slight, as related to questions 1-a and d.
   (e) Retailers—A considerable part, as related to questions 1-a and c.
   (f) Consumers—a small part, as related to question 1-a.
   (g) Competitors—Considerable part, as related to question 1-a and slightly, as related to question 1-b.

   Tires:

   Tires are designed by our own designers, and the designs made possible at times from salesmen, retailers' and customers' requests.

3. **Question:—By what procedure do you gauge the popularity a certain style and design will have before you begin production?**

   Answer:—Mechanical Goods:

   By survey of the market field by our own development engineers and from salesmen's reports.

   Tires:

   The popularity of our tires is made by the service they render to the consumer.

4. **Question:—How often do you develop new styles and designs?**

   Answer:—Mechanical Goods:

   We continually develop new styles and designs.

   Tires:

   We develop new sizes and tire designs as little as possible, due to the effect that it has upon the trade—as to the stability of our product.

5. Question:—About what percentage of your production is devoted to

(a) Staples?

(b) New Styles and designs?

Answer:—Mechanical Goods:

About 75 per cent of our production is devoted to staples and about 25 per cent to new styles and designs.

Tires:

The majority of our products are devoted to staples and only when absolutely necessary do we make up special products for our customers.

Increased Planting of Budded Clones

AT a meeting of the Java Rubber Planters Association on September 22, 1928, the entire session was devoted to reports and discussion of the progress made in the knowledge regarding the properties of budded clones from selected producers and the extension of their use in planting and replacing rubber gardens in Netherland India. The proceedings of the meeting have been made the subject of an extended report by United States Consul General Coert du Bois, at Batavia, Java.

The Dutch planters attach so much importance to the use of selected budded stock that they believe that the resultant increase of yield and corresponding decrease in cost of production is the answer, for several years to come, at least, to native rubber competition and to the overtures of the British Malaya planters for combinations to maintain price.

Briefly stated, the process used by the Dutch planters consists in marking down from the records of many plantations a very few of the highest yielding trees and budding stump grafts from these high producers on seedling stock 1 to 2 inches in diameter. Before a "Clone," or a descendant of a particular tree through bud-reproduction, can be approved for use, it must reach tapping age and actually produce, under observed and controlled conditions in an experiment station or in the experimental plot of a planter member of the Association, a yield comparable to that of its mother tree. A minimum of six years is required to produce an approved clone.

The first experiments in this line led "Avros," the North Sumatra Rubber Planters Association, to publish the claim that 33 per cent of superior mother trees would produce high-yielding clones; and 33 per cent, medium producers; and 33 per cent, poor yielders. Experiments carried on over a series of years have led the Buitenzorg Rubber Experiment Station to the conclusion, now generally accepted by the Java planters, that from 4 to 10 per cent of the high-yielding mother trees only will give clones that when seven years old will equal or exceed the latex yield of the mother. From 90 to 95 per cent of the clones descended from high yielding mothers will, when arriving at tapping age, produce no more than the average seedling. The Dutch are now using exclusively for planting stock on new plantations buds from approved and tested clones not less than 7 years from the mother tree.

In the case of new plantings, 100 per cent of the Sumatra East Coast planters, and 75 per cent of the Java planters are reported to be using budded stock exclusively at 250 trees to the hectare. On all well managed estates in both Sumatra and Java all replacements are made with budded stock.

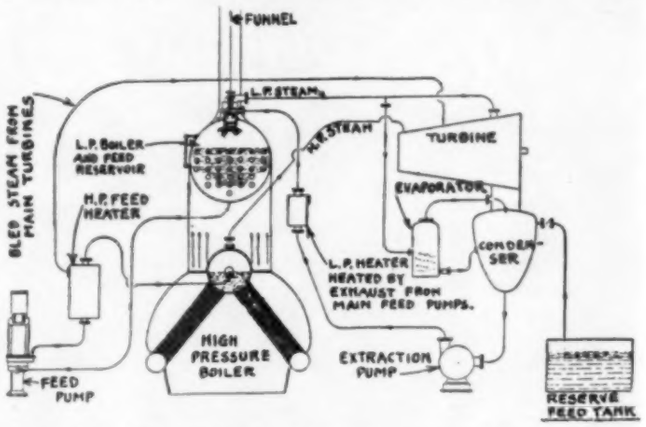
The Seiberling Tyre Company (Great Britain) Ltd., of Birmingham, have opened a London branch, at 7 Hertford Street, W. 1, with Donald C. Guidici as manager.

Schaphorst's CHATS *with the* ENGINEER

By W. F. SCHAPHORST, M.E.

Novel Heat Saving System

ENGINEERS in charge of rubber factory power plants will doubtless be interested in the power plant system developed by G. & J. Weir of Glasgow, Scotland. A diagrammatic arrangement is shown herewith. In this system, as will be noted, a low pressure boiler is placed in the uptake of the main boiler. The high pressure steam passes into the high pressure end of the steam turbine while the low pressure steam may enter the turbine at about atmospheric pressure, or even lower and is utilized in the low pressure stages. The arrangement of feeding, feed heating, extraction, and everything else, are carefully worked out. This system has the following advantages:—



1—The low-pressure boiler acts as a feed-heater, a steam generator, and a feed reservoir in one.
2—A closed and de-aerated feed system is obtained.
3—The heat absorbing capacity of the low pressure boiler is not limited to feed-heating.
4—Main boiler can be forced without serious loss. Extra load taken by low pressure boiler.
5—The absorption of auxiliary exhaust steam in the feed water is made possible to the fullest extent.
6—The whole feed system is under low pressure.
7—No brickwork, hence minimum weight and leakage.

While a system of this sort is of less advantage to plants where low pressure steam is usable in processing work, I believe it will nevertheless be of interest and possibly of value toward encouraging greater economy even in such plants.

Watching the Coal Pile

AN ingenious arrangement for weighing coal was recently developed by a prominent mechanical engineer for a large and well known manufacturer It is semi-automatic in operation. A wheel-barrow is placed on the scales and is loaded by hand with scoop shovels. As soon as the load of coal is "standard" in weight, two lights, easily seen by the shoveler, are lighted simultaneously. Each load, therefore, contains a definitely known amount of coal. At the same time a recording instrument located in the engine room registers each standard load.

There is an obvious advantage in knowing the exact amount of fuel being burned under all conditions of load.

RUBBER CHEMISTRY and Technology

Electrical Behavior of Rubber-Sulphur Compounds*

By DONALD W. KITCHIN

Research Laboratory, Simplex Wire & Cable Co., Boston, Mass.

ELECTRICAL tests at various frequencies on samples of vulcanized rubber containing different amounts of combined sulphur (Figs. 1 and 2) show very interesting features which may be related to the dipole theory. Curtis, McPherson, and Scott[1] showed the interesting relations of power factor and dielectric constant at 1000 cycles to composition of vulcanized rubber. They found a power factor maximum of 8 per cent at 13 per cent sulphur, and a dielectric constant maximum of 3.75 per cent at 10.5 per cent sulphur. Both properties showed a minimum at 19 per cent. These workers pointed out the fact that the maxima and minima occurred at compositions corresponding to simple formulas and claimed that "compound formation is the fundamental basis for the interpretation of the observed changes." The power factor maximum would correspond to $(C_5H_8)_3S$, and the dielectric constant maximum to $(C_5H_8)_4S$. No explanation is given of the fact that the two maxima occur at different compositions.

Figs. 1 and 2 show that the positions of the maxima can be shifted over a wide range of composition by changing the test frequency and that, therefore, the fact that at 1000 cycles the maxima did coincide with compositions corresponding to simple chemical compounds is without significance.

The suggestion that certain rubber-sulphur chemical combinations are probably dipole molecules is due to Mr. C. R. Boggs. He pointed out the fact that while the untreated rubber molecule is electrically neutral, as is shown by electrical tests, the chemical addition of sulphur in such a manner as to produce an unsymmetrical molecule would produce a dipole. In other words, if more S groups became attached to the rubber molecule on one side of the original center of charge than on the other, a dipole molecule would result. If further S groups were added so that the arrangement became symmetrical, the molecule would again lose its dipole properties. Such a compensating effect is well known in other substances. Methane CH_4 is electrically neutral. If a strong dipole-producing group, like the nitro group, is added to form nitro-methane CH_3NO_2 by replacing one H, the molecule shows a high dipole moment, as indicated by the dielectric constant 56. The addition of more NO_2 groups, however, progressively reduces the dipole moment until with the symmetrical tetra-nitro-methane $C(NO_2)_4$ the dielectric constant falls to the neutral value of 2.1. Many other examples might be given, but the above shows well the progressive compensation.

In the low sulphur range the chances are greater that the compounds formed will be dipoles. As the percentage of sulphur is increased, the probability of compensation increases. Thus, the com-

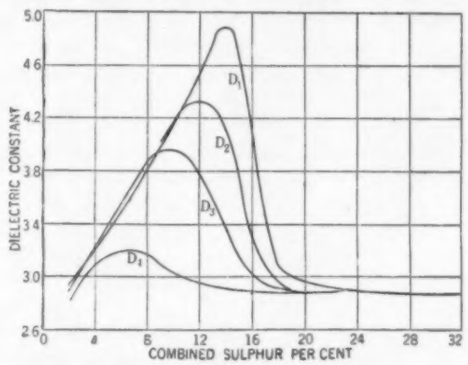


FIG. 1—CURVES SHOWING DIELECTRIC CONSTANT *vs.* PERCENT COMBINED SULPHUR AT 4 FREQUENCIES

Subscripts refer to frequency:
1 0 cycles, *i.e.*, static stress
2 60 cycles
3 1000 cycles
4 380,000 cycles

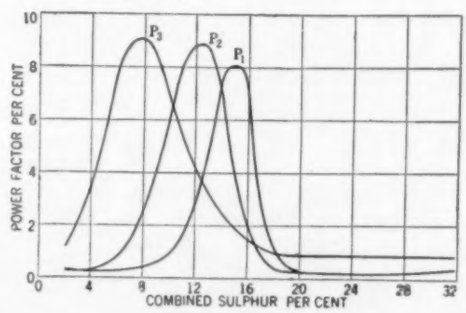


FIG. 2—CURVES SHOWING POWER FACTOR *vs.* PER CENT COMBINED SULPHUR AT 3 FREQUENCIES

Subscripts refer to frequency:
1 60 cycles
2 1000 cycles
3 380,000 cycles

position indicated by the per cent of combined sulphur at maximum power factor or dielectric constant would certainly not correspond to the formula for the molecule of maximum dipole moment. Starting with 0 per cent S and increasing the amount of combined sulphur, we should therefore expect to find at first a rise of power factor and dielectric constant to maximum as the number of dipoles in-

*This article comprises one part of a lengthy paper entitled "Power Factor and Dielectric Constant in Viscous Dielectrics" which the author presented at the Winter Convention of the A. I. E. E., New York, N. Y., Jan. 28-Feb. 1, 1929. The paper gave the results of a study of the peculiar variations with temperature and frequency of the dielectric constant and power factor of rosin, rosin oil and castor oil. It also included the data given here which shows at several frequencies the relation of dielectric constant and power factor to the composition of vulcanized rubber.

[1]Curtis, McPherson, and Scott, Scientific Papers of the Bureau of Standards No. 560.

creased, followed by a drop in both properties as the further addition of sulphur atoms eliminated the dipoles by compensation. The mechanism of the dipole power loss would here also be one of heat loss due to the motion. In this case, however, the molecules would probably be held by elastic forces, so that in responding to the changing field they would subject the surrounding medium to rapid stretch and release. Since rubber is an imperfectly elastic material, this internal motion would give rise to frictional losses measured electrically as power loss. The above discussion considers only the rise and decay of dipole effect due to change in number of dipoles. Another important factor is the increasing hardness of the medium. As the sulphur content increases, the rubber becomes more and more rigid, so that even if the number of dipoles were constant, the amount of motion in a given field would change greatly with changing composition due to the change in opposing forces. Thus, the phenomenon in vulcanized rubber is more complicated than in the liquid materials previously studied, in that simultaneously the number of dipoles and the stiffness of the medium is changing.

However, it is possible to predict qualitatively some electrical features that should be observed if the application of the orientation theory to rubber is permissible. There should be a characteristic frequency for each composition in the region where dipole molecules exist; the softer the rubber, the higher the characteristic frequency. Then the maxima in the dielectric constant and power factor should occur at lower sulphur contents the higher the applied frequency. The curves (Figs. 1 and 2) show this to be true. As in the case of the oils, the maximum dielectric constant occurred at higher temperature—i. e., lower viscosity than the maximum power factor, so in the rubber it should lie on the low sulphur side of the power factor maximum where the rubber is softer. Comparison of the corresponding curves in the two figures show that this is so. The progressive drop in the values of the dielectric constant maxima for increasing frequency is readily explained. From 0 per cent S to 14 per cent, at least, the number of dipoles is increasing nearly linearly as the d-c. dielectric constant curve shows. But, although there are more dipoles at 10 per cent S than at 6 per cent S, the dielectric constant for 380,000 cycles is greater at 6 per cent because at higher sulphur contents the stiffness becomes too great for dipole response at this frequency. Similar relations hold for the other frequencies. Even the d-c. test probably does not show the composition at which the maximum number of dipoles are present. The speed of orientation may become so low at high sulphur contents that the usual d-c. test does not allow the full orientation. This idea agrees with the very long relaxation time in solid rosin shown by the optical tests.

A thorough study of the electrical properties of vulcanized rubber might throw considerable light on the nature of the vulcanization reactions. The application of the orientation hypothesis to rubber is only tentative and considerable critical experimental work would be needed to place it on as firm a basis as in the case of viscous liquids.

Mark of Origin Advocated in Britain

THE report of the Standing Committee under the British Merchandise Marks Act respecting rubber manufactures has just been issued as a Parliamentary White Paper.

The Committee recommends an Order in Council for the marking, when exposed for sale in the United Kingdom, of various rubber products, including sheet rubber, hose and tubing, tennis and golf balls, play balls and football bladders, golf tees and ball cleaners, water bottles, air beds, sponge bags, mats, matting and flooring tiles, various surgical articles, horn bulbs and pedal rubbers, sports grips, rubber aprons, bathing caps, tobacco pouches, erasers, soles and heels, corks and sponges. In certain cases, including golf and tennis balls, each article is to have the place of origin stamped, stenciled, or printed on it. In others it is proposed that the marking should appear on the labels or containers.

'Nesting' Tires on Freight Cars

THE method used in loading freight cars with tires and tubes, as shown in the accompanying illustration, is known in railroad terms as "nesting," and permits a

greater volume to be loaded than if bales were stood on end or laid flat and piled up in tiers. This particular car was a fifty-foot Northern Pacific car and carried 48,229 pounds of Fisk tires and tubes.

February Rim Output Shows Gain

PRODUCTION of automobile and other rims during February was considerably above that of either the previous month or February, 1928, and brought the total for the first two months of 1929 far above the same period a year ago. During the past month the number of rims inspected and approved by the Tire and Rim Association of America, Inc., totaled 2,265,024 as against 1,835,207 in January and 1,806,437 in February, 1928. Total output for the first two months of 1929 was 4,100,231.

Rim Size	Feb. 1929 No.	%	2 Mos. 1929 No.	%
Motorcycles				
24x3 "CC"	——	—	3216	0.1
24x3 Std...	——	—	4200	0.1
26x3 "CC"	——	—	756	0.0
28x3 "CC"	——	—	337	0.0
Total	——	—	8509	0.2
Clincher				
30x3½ ..	26968	1.2	72507	1.8
31x4	——	—	——	—
Total	26968	1.2	72507	1.8
18" Balloon				
18x4	121051	5.3	204745	5.0
18.3.25 ..	3395	0.2	23472	0.6
18x4½ ..	33718	1.5	54830	1.3
18x5	4890	0.2	11714	0.3
Total	163054	7.2	294761	7.2
19" Balloon				
19x2.75	42090	1.9	65306	1.6
19x3½ ..	74616	3.3	224201	5.5
19x4	505333	22.3	803678	19.6
19x3.25	38074	1.7	64593	1.6
19x4½ ..	81026	3.6	98215	2.4
19x5	12296	0.5	15815	0.3
Total	753435	33.3	1271808	31.0
20" Balloon				
20x2.75	506,053	22.3	930233	22.7
20x3½ ..	2292	0.1	23822	0.6
20x4	231972	10.2	445082	10.9
20x4½ ..	39007	1.7	92642	2.3
20x5	57484	2.5	100400	2.4
20x6	3472	0.2	20448	0.4
20x6.75dc	3184	0.2	20448	0.4
Total	843464	37.2	1616349	39.4
21" Balloon				
21x2.75	20194	0.9	20194	0.5
21x3½ ..	38828	1.7	57815	1.4
21x4	5946	0.3	14881	0.4
21x4½ ..	4262	0.2	10114	0.2
21x5	543	0.0	543	0.0
21x6	1017	0.0	1017	0.0
Total	70790	3.1	104564	2.5
22" Balloon				
22x4	350	0.0	350	0.0

Rim Size	Feb. 1929 No.	%	2 Mos. 1929 No.	%
High Pressure				
30x3½-23	——	—	6188	0.2
32x4½-23	7120	0.3	14726	0.3
32x4 -24	5148	0.2	6376	0.2
33x4½-24	——	—	——	—
33x4 -25	——	—	——	—
34x4½-25	1156	0.1	1156	0.0
Total	13424	0.6	28446	0.7
20" Truck				
30x5	306213	13.5	560895	13.7
32x6	35213	1.6	64027	1.6
34x7	12182	0.5	22591	0.6
36x8	15947	0.7	21089	0.5
40x10	304	0.1	304	0.0
Total	369859	16.4	668906	16.4
22" Truck				
36x7	——	—	——	—
38x8	542	0.0	548	0.0
Total	542	0.0	548	0.0
24" Truck				
34x5	630	0.0	632	0.0
36x6	6333	0.3	10885	0.3
38x7	2639	0.1	5180	0.1
40x8	10676	0.5	12172	0.3
44x10	246	0.0	246	0.0
Total	20524	0.9	29115	0.7
Airplane				
8x3	——	—	15	0.0
12x3	108	0.0	132	0.0
16x3½ .. (24x4)	35	0.0	954	0.0
20x3½ ..	81	0.0	81	0.0
20x4	——	—	6	0.0
20x5	——	—	2	0.0
20x6	117	0.0	334	0.0
20x8	174	0.0	389	0.0
24x10	109	0.0	109	0.0
18x4 Cl	1990	0.1	2346	0.1
Total	2614	0.1	4368	0.1
GRAND TOTAL	2,265,024		4,100,231	

Scott Tester Equipped With Elongated Cooling Tank

IN a recent paper* reviewing the laboratory work done on the use of Selenium in rubber, Dr. Somerville described a special testing machine equipped for making stress-strain tests at 0° and 100°. This machine was a stock Scott tester equipped with a tank to hold water so arranged that the rubber test piece could be stretched in the water at approximately a freezing or boiling temperature.

It was found that if samples of rubber in the form of a circular test ring are stretched at 0° and 100° by means of this machine, what is known as a stress-strain curve can be drawn automatically, and if the curves are drawn at different temperatures on samples cut from the same sheet of stock, the position or location of the stress-strain curves varies according to the temperature.

The testing machine equipped with the water tank was designed by the Henry L. Scott Co., Providence, R. I., based on the ideas of Dr. Somerville. The original tester proved highly satisfactory but it was found to have a stroke which was not long enough to test stocks of high elongation. This drawback resulted in a new machine being designed, the first description of which appears here.

The accompanying illustration shows the new tester equipped with an extra large water tank. It stands over 14 feet high, weighs 1,000 pounds and the water tank has an inside height of 48 inches.

Tester Showing Water Tank

The tank is arranged with various piping from the water supply and through a frigidaire attachment. It is also equipped with electrical heating units for raising the temperature of this water up to the boiling point. It has the stirring arrangement for circulation of the water in the tank itself, and the tank is provided with two screens so that if desirable it can be cooled actually with finely ground ice, or CO_2 cubes.

The machine is arranged with an autographic recorder which is also arranged for obtaining the stress strain diagram by the sparking method, and it is equipped with a five speed gearing so that speeds of 1", 2", 6", 12" and 20" per minute movement of the pulling jaw can be quickly obtained. The head is made in four capacities, 0-20 lbs., 0-40 lbs., 0-80 lbs., and 0-160 lbs.

It is designed to be mounted through the floor of the building so that the gear box, motor and drive mechanism are entirely below the floor line, and the tank and testing end of the machine only are above. This enables the operator to handle the machine without resorting to a step ladder or high platform and keeps the real machinery out of the laboratory. In installing the machine, it is necessary to provide 4 feet below the bottom of the machine for travel of the main screw or draw bar.

*See "*Some New Laboratory Work on Rubber*," by A. A. Somerville and J. M. Ball, THE RUBBER AGE, February 10, 1929. P. 490-494.

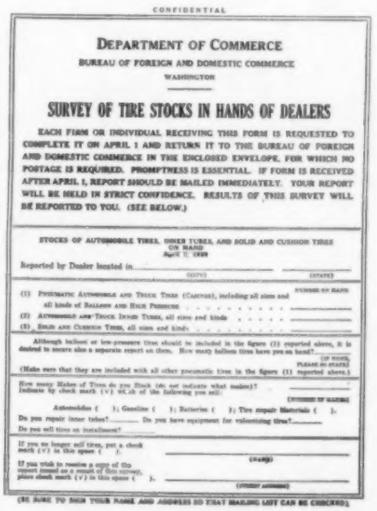
Semi-Annual Tire Dealers' Stock Survey Begun

QUESTIONNAIRES are being sent to approximately 110,000 tire dealers throughout the country by the Department of Commerce for the semi-annual survey of tires and tubes in the hands of these retailers as of April 1. On these forms the dealers are asked, as in previous years, to indicate how many pneumatic tires, inner tubes, solid and cushion tires they have on hand. By ascertaining the size of the available tire stocks through the country, the report drawn from this survey will serve as a guide for manufacturers in planning their production schedules for the next six months and will also develop a great amount of useful information for the dealers.

Number of Replies Expected to be Big

Further data regarding the number of makes of tires carried by dealers, the other businesses in which dealers engage, the equipment maintained in tire shops, and the use of the installment selling plan are also secured from these questionnaires. On April 1, 1928, reports from 30,733 dealers indicated that the average stock was 81.2 casings and 123.4 inner tubes. On October 1, 1928, due to the usual seasonal declines, 26,012 dealers reported an average stock of 64.8 casings and 107.4 tubes. The current survey is expected to reveal a new high record for dealers' stocks since the institution of these surveys in 1924.

The Department of Commerce is making every effort to keep its mailing list as accurate as possible, and one employe has been working constantly on the revision and correction of this list since the middle of November. As a result, about 6,000 names were removed from the list including Post Office returns and firms reporting that they were out of business, about 3,000 duplications have been removed, and between 3,000 and 5,000 new names added from extra returns sent in last October. The 26,012 dealers who reported last October have been placed in a separate "live" mailing list apart from the balance of approximately 85,000 dealers who did not report.



CONFIDENTIAL

DEPARTMENT OF COMMERCE
BUREAU OF FOREIGN AND DOMESTIC COMMERCE
WASHINGTON

SURVEY OF TIRE STOCKS IN HANDS OF DEALERS

EACH FIRM OR INDIVIDUAL RECEIVING THIS FORM IS REQUESTED TO COMPLETE IT ON APRIL 1 AND RETURN IT TO THE BUREAU OF FOREIGN AND DOMESTIC COMMERCE IN THE ENCLOSED ENVELOPE, FOR WHICH NO POSTAGE IS REQUIRED. PROMPTNESS IS ESSENTIAL. IF FORM IS RECEIVED AFTER APRIL 1, REPORT SHOULD BE MAILED IMMEDIATELY. YOUR REPORT WILL BE HELD IN STRICT CONFIDENCE. RESULTS OF THIS SURVEY WILL BE REPORTED TO YOU. (SEE BELOW.)

STOCKS OF AUTOMOBILE TIRES, INNER TUBES, AND SOLID AND CUSHION TIRES ON HAND ... April 1, 1929

Reported by Dealer located in ... (CITY) ... (STATE)

(1) PNEUMATIC AUTOMOBILE AND TRUCK TIRES (CASINGS), including all sizes and all kinds of BALLOON AND HIGH PRESSURE ... NUMBER ON HAND

(2) AUTOMOBILE AND TRUCK INNER TUBES, all sizes and kinds ...

(3) SOLID AND CUSHION TIRES, all sizes and kinds ...

Although balloon or low-pressure tires should be included in the figure (1) reported above, it is desired to secure also a separate report on them. How many balloon tires have you on hand? (IF NONE, PLEASE SO STATE)

(Make sure that they are included with all other pneumatic tires in the figure (1) reported above.)

How many Makes of Tires do you Stock (do not indicate what makes)? ...

Indicate by check mark (√) all of the following you sell: (DESIGNATE BY NAMES)

Automobiles ( ); Gasoline ( ); Batteries ( ); Tire repair Materials ( ).

Do you repair inner tubes? ... Do you have equipment for vulcanizing tires? ...

Do you sell tires on installment? ...

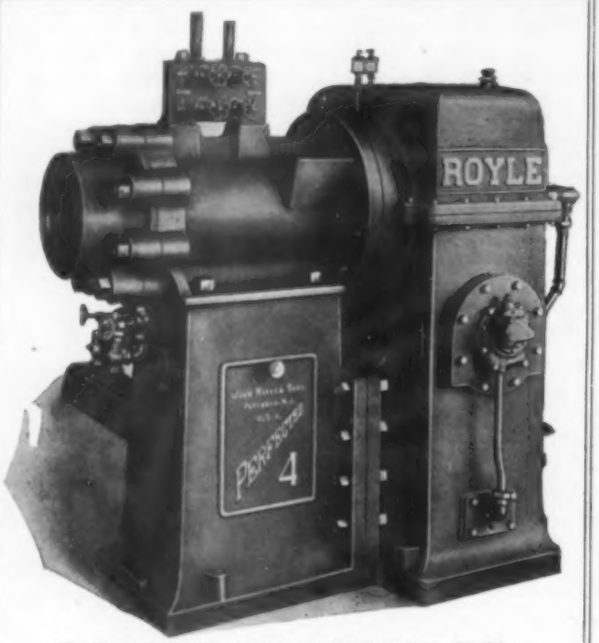
If you no longer sell tires, put a check mark (√) in this space ( ). (NAME)

If you wish to receive a copy of the report issued as a result of this survey, place check mark (√) in this space ( ). (STREET ADDRESS)

(BE SURE TO SIGN YOUR NAME AND ADDRESS SO THAT MAILING LIST CAN BE CHECKED)

Form of Questionnaire Sent Out by Department of Commerce

Manufacturers are urged to encourage their dealers in every way possible to answer these questionnaires so that the survey may be more nearly complete than in previous years and adequately representative of the business.



The New Model No. 4 Royle Perfected Tubing Machine

ROYLE engineers have developed in the New Model No. 4 Royle Perfected Tubing Machine a means for lubricating the driving worm with a constant supply of cool oil. This is another very important engineering feature of the New Royle Tubing Machine.

The driving worm lubricating system provides for the drawing of cool oil from the bottom of the oil reservoir by means of an oil pump of ample capacity which forces the cool oil to the worm.

As the oil reservoir is designed to hold an abundant supply of oil the driving worm is assured a plentiful supply of cool oil.

A cool operating driving worm not only permits longer runs but adds considerably to the life of the machine.

We solicit your inquiries

JOHN ROYLE & SONS
PATERSON, NEW JERSEY

Represented by
National Rubber Machinery Co., Akron, Ohio

Modernize Your Core Equipment

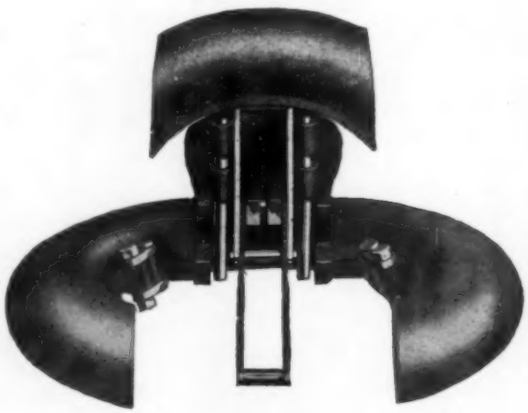
With

India Cores

The core which has found wide favor in the leading tire factories.

The India building core means a simple, well constructed, quick acting, interchangable core.

The three chucks, namely Midget, Standard, and Heavy Duty, accommodate all sizes up to and including 8-inch High Pressure and 8.25.



Write for Prices and Full Details

MANUFACTURED BY

The
BRIDGWATER MACHINE COMPANY

AKRON, OHIO

Licensed by India Mch. & Rubber Mold Co.

EDITORIAL COMMENT

The Merit of Symposiums

CONSIDERABLE praise is due the New York Group of the Rubber Division of the American Chemical Society for its very successful meeting on the evening of March 20. The papers presented were scholarly and seriously received. But the important feature of the program was that the papers all dealt with one general subject and constituted a complete symposium on one particular phase of rubber chemistry. Such programs are to be commended in contrast to the programs of some of the group gatherings where a variety of papers have been read on an equal variety of unrelated subjects.

In the instance of the New York meeting the papers were entirely on the subject of stearic acid and its relation to the rubber industry. The members, listening to the papers and discussion which followed, came away with a far clearer conception of the subject than they would have held had the evening been given over to a miscellaneous number of subjects. It is hoped that this form of program will be followed more often in the future. The field of rubber chemistry is vast enough to supply a multitude of general subjects which will lend themselves to extended symposiums and the group members and the rubber industry in general will be richer by reason of such comprehensive studies on related problems.

The Pan-American Highway

A VERY gratifying piece of legislation passed in the last days of the late Congress was the appropriation for assisting, along with some Latin American countries, in the surveying of the Inter-American Highway. The bill was signed by Mr. Coolidge a few moments before he surrendered his office to President Hoover.

The completion of this highway, several considerable stretches of which are already built, will be the greatest boon to automobile transportation in the history of the industry, and the contemplation of inter-American tours can only mean further far-reaching possibilities for tire manufacturers. Under the terms of the resolution of Congress, the Secretary of State will have at his disposal $50,000 to be expended in working with the governments of Central and South America in the first field study of this project that has been undertaken since the days when Henry Clay first broached it.

The Pan-American Confederation for Highway Education has already compiled considerable data on highways in the American republics, but it is altogether possible that before a route is selected for the proposed Pan-American Highway an actual survey may be necessary.

Our Machine Age

DURING a recent meeting of the Ohio State Chamber of Commerce, at Columbus, O., Magnus W. Alexander, president of the National Industrial Conference Board, New York, made the interesting observation during the course of his speech, that machine production not only has proved a powerful factor in lifting the level of our economic or purely material existence, but machine economy has increased our margin of leisure for the purpose of social and cultural pursuits.

Analyzing traditional prejudices against the influence of the machine upon civilization, Mr. Alexander asserted that it developed a higher type of workers, made the task of the unskilled routine worker more profitable and lessened work hours, and that machine civilization, far from stereotyping or putting the stamp of monotonous uniformity upon tastes and living habits, is not only creating its own new types and forms of beauty in manufactured products, but also is providing new inspiration to art, literature, and philosophy.

Mr. Alexander also repeated the oftime remark that mass-production lowers unit production costs and thus tends to lower prices, and that therefore demand for a given product may increase out of all proportion to population-increase as mass-production enters an industry. Thus with the increased demand for production frequently no displacement of labor takes place following the introduction of improved technological methods.

The rubber industry, in fact, is an outstanding example of this fact. The industry has required no more workers to produce the present gigantic output of rubber products than it did in 1920, but in spite of the increased cost in materials used and in spite of the higher wages paid now sells better products at lower prices than in 1920.

The RUBBER AGE

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SHORT NEWS & DEPARTMENTS

Names in the News
Rubber Goods & Specialties
Foreign Rubber News
Crude Rubber Items

MILLER RUBBER COMPANY SHIFTS ITS OFFICERS

At the annual meeting of the stockholders of the Miller Rubber Company, T. E. Borton of Borton & Borton, J. O. Eaton and H. W. Hillman, both of Otis & Company, were elected to the board of directors. The board had been increased from 10 to 12 members, and one vacancy had been caused by the retirement of H. T. Holmes. Other directors were re-elected.

Jacob Pfeiffer, president of the company, was elected chairman of the board, and William Pfeiffer, formerly secretary-treasurer and general manager, was chosen as president. L. C. Rockhill was elected vice-president in charge of sales, R. T. Griffith vice-president in charge of production, and Frank Fenton factory superintendent. Other officers were re-elected.

DOMINION RUBBER SHOWS GAIN IN SALES VOLUME

Net sales of the Dominion Rubber Company, Ltd., for the year ended December 31, 1928, amounted to $20,249,954 as compared with $19,201,064 in 1927. Reduction of operating expenses at $18,545,415 left a net income for the year of $1,704,538 as against $1,543,522 in the preceding year. Deduction of interest at $521,233 left a balance of $1,183,305.

Preferred dividends paid out amounted to $210,000 and left a balance of $973,305 available for the common shares as against $744,780 in 1927. Dividends on the common stock amounting to $2,805,500 were paid out during the past year, as against nothing paid on the common in 1927, and left a debit balance for 1928 of $1,832,195.

Previous surplus was brought forward at $8,050,363, leaving a profit and loss balance in the current report of $6,218,168. The majority of the common stock of the company is owned by the United States Rubber Company.

R. T. Vanderbilt in New Offices

The R. T. Vanderbilt Company, Inc., moved to its new quarters in the New York Central Building, 230 Park Avenue, New York City, on March 18. The telephone numbers of the company remain the same as were used in its former office at 50 East 42nd Street.

Polson Has Radio Programs

The Polson Rubber Company, Garretsville, Ohio, manufacturers of automobile inner tubes, inaugurated a series of radio broadcasting programs last month through Station WLW, Cincinnati, O. The first of the series was entitled, "Tahiti Bound," with its action laid in the South Seas.

Michelin Arrives Home

Hauvette Michelin, president of the Michelin Tire Company, Milltown, N. J., arriving at New York on the S.S. Paris.

Balloons for Tire Dealers

Through special arrangement with the Perfect Rubber Company, Mansfield, O., the United States Rubber Company has begun to furnish its tire dealers with attractive advertising toy balloons at special prices. The balloons are stamped with a desgin and the familiar slogan, "United States Tires Are Good Tires," as well as the name and address of the dealer presenting them. The company recommends that each dealer institute a "balloon day" in his town on which to distribute these balloons, which are furnished in both the round and airship models.

Tasco Appoints Akron Agent

The Tasco Asphalt Company, 238 Wilson avenue, Newark, N. J., manufacturers of Tasco rubber softeners, have appointed F. F. Myers Company, Akron Savings and Loan Building, Akron, Ohio, as their agents in that territory. This company also have an agent in Trenton, N. J., F. V. Bechtel, 289 North Willow street, and expect to appoint additional agents in Boston, Chicago, on the Pacific coast and in Europe very shortly.

The Paraffine Companies, Inc., San Francisco, Cal., recently celebrated its 45th anniversary as a manufacturing concern. Last year this company acquired the Plant Rubber & Asbestos Works of the same city, manufacturers of mechanical rubber goods.

NEW JERSEY ZINC NAMES TECHNICAL SERVICE MEN

Bruce R. Silver has been appointed manager of technical service of the New Jersey Zinc Sales Company, to succeed E. W. Boughton, who has resigned as of April 1, to go with the R. T. Vanderbilt Company.

Mr. Silver has been with the New Jersey Zinc Sales Company for a number of years. A broad experience with rubber problems and with products of the New Jersey Zinc Company from both the commercial and technical standpoints has been gained by Mr. Silver in his previous duties. Before his appointment last year as manager of sales development he was district sales manager, with headquarters in Cleveland, and before that he was a member of the technical service organization—then known as the sales engineering department. Prior to his becoming associated with the New Jersey Zinc Company, Mr. Silver was chief chemist for the Dunlop Tire & Rubber Company at Buffalo, N. Y.

L. H. Trott and V. A. Belcher, both of whom have also been with the New Jersey Zinc Sales Company for a number of years, have been appointed assistant managers of technical service.

CENTURY CARBON CO. TO CONSTRUCT NEW PLANT

The Century Carbon Company has acquired a large tract of land at Crew Lake, Richland Parish, La., as a site for a new carbon black manufacturing plant and gasoline-extraction refinery. The Century company is a subsidiary of Wishnick-Tumpeer, Inc., New York City.

The new plant will comprise a group of buildings estimated to cost in the neighborhood of $500,000. The carbon black unit will be equipped to provide for the handling of about 20,000,000 cubic feet of natural gas per day.

Olds Backs Florida Tire Plant

It is reported that R. E. Olds, automobile manufacturer, is lending his support to plans for the construction of an automobile tire factory at Tampa Shores, Fla., between Tampa and Clearwater. In announcing the new enterprise, statistics were offered that $35,000,000 is spent for tires in Florida every year.

U. S. Clothing Convention

The clothing division of the United States Rubber Company held a convention at the Great Northern Hotel, Chicago, Ill., from March 11 to 13. New models and advertising plans for the current year were described to the company's representatives.

FALLS RUBBER COMPANY SUED BY DISTRIBUTORS

The Campbell Tire & Rubber Company, Cleveland, O., filed suit in common pleas court on March 8 against the Falls Rubber Company, Cuyahoga Falls, O., for the sum of $83,000 alleged to have been lost by the plaintiff through unfair business tactics of the defendants. The Campbell Company claims that it became representatives of the tire manufacturer with the understanding that it would be sole distributor for the Falls line of tires, both wholesale and retail, in Cuyahoga County. On this basis it is claimed that the Campbell organization was incorporated with capital stock of $25,000 and arranged for a business place, for advertising and for the hiring of salesmen.

It is alleged that soon after the Campbell company began business, officials of the Falls Rubber Company made contracts directly with dealers in Cuyahoga County. This was said to have occurred in the summer of 1927, and the plaintiff states that since November or thereabouts the company has been operating at a loss and that stockholders will lose $8,600 paid in when the company was organized. They also claim that they will lose, by this action, the business they contemplated during the five-year term they agreed to act as exclusive distributors for the Falls Rubber Company.

W. P. Cline, vice-president of the Falls Rubber Company, declares that the Cleveland concern was never given the rights claimed. "W. S. Campbell, who was formerly sales manager for the Falls Rubber Company and who is instigating the suit, was not induced to incorporate a concern," says Mr. Cline, "and was given only an agency in the Cleveland downtown section, which was new territory. There were 50 Falls Rubber dealers in Cleveland not affected by the arrangement."

Douglas Small

Douglas Small, chemist in the analytical department of the General Laboratories of the United States Rubber Company, Passaic, N. J., died on February 23 at the age of 28. Born in Scotland and educated at Union College, Schenectady, N. Y., he joined the staff at the United States laboratories after a year as development chemist for Armour & Company.

Norman A. Laselle

Norman A. Laselle, footwear representative of the United States Rubber Company at its Boston, Mass., branch since 1917, died on February 25 at the age of 56. He had been selling "U. S." footwear for 31 years, his first connection having been made in 1898 with the branch in Boston then operating under the name of Charles A. Coe & Company.

A few weeks previous to his death, Mr. Laselle had undergone two operations for a mastoid infection. He is survived by his widow.

Puritan Rubber Adds Space

The Puritan Rubber Company, Trenton, N. J., is now operating with three shifts of workmen in producing Amtico rubber tiling and mats. New equipment has been installed in the present factory, and the company will shortly erect another plant addition to enable it to take care of increasing orders.

Viking Tires Sell Heavily

The Combination Rubber Manufacturing Company, Trenton, N. J., makers of Viking tires, is now operating 24 hours a day with three shifts of workers. The company is working on rapidly increasing orders for its tires, particularly from southern and western states.

Magnet Street Sweeper Saves Tires

WITH this new anti-puncture device, the Surface Transportation Company, New York City, is keeping its bus routes clean. The magnetic apparatus, arranged by an ingenious employe from material in the company's junk pile, picks up nails, tacks, bits of scrap iron and other metal fragments that are dangerous to pneumatic tires.

CANADIAN DUNLOP HEADS TO CONTINUE IN OFFICE

The executives of the Dunlop Tire & Rubber Goods Company, Ltd., who were reelected at the recent meeting of the directors, include the Hon. E. B. Ryckman, president; J. Westren, vice-president and general manager; and A. E. King, secretary and treasurer. The directors of the company are William Coyne, Wilmington, Del.; E. B. Germain, Buffalo, N. Y.; A. B. Purvis, Montreal, Que.; William McMaster, Montreal, Que.; G. H. London, Eng.; D. E. Beynon, Toronto, Ont., and the three officers. Mr. Germain is president of the Dunlop Tire & Rubber Corporation of Buffalo, N. Y.

The declaration of the regular quarterly dividend at the rate of 7 per cent on the preferred stock, payable April 1, makes the 92nd dividend paid by the Canadian Dunlop company without interruption since 1899 when the stock was originally issued.

RUBBER COMPANY STOCKS SELLING AT NEW HIGHS

Common stock issues of four rubber manufacturing companies reached new high levels for the year during the past fortnight despite the general feeling of uneasiness on the various exchanges. Goodyear shot up more than 20 points to 151⅞ and dropped back to 149, while United States Rubber touched 65 and closed only slightly lower. On the New York Curb Exchange, the Firestone Tire & Rubber common advanced 40 points to a new peak of 285, receding approximately 10 points in the closing day. General Tire & Rubber, which was quoted at 270 two weeks ago, closed at a new high of 298.

The majority of the other rubber company issues on the different exchanges showed gains while other stocks were receding. Fisk rights, since their admission to the New York Exchange, have been selling from 2¾ to 3 in fairly active trading. The American shares of the Pirelli Company of Italy, which sold above 65 when first admitted to trading on the New York exchange this year, have recently declined to the neighborhood of 54.

Late Stock Prices

	Last Price		High	Low
	Mar. 19	Mar. 4	—1929—	
Ajax	9½	9⅛	11¼	9
Falls	8	8½	11⅝	5
Faultless	36	—	39⅞	33
Firestone	275¼	245	285	220⅛
do. 6% pfd.	110	110	111	108¼
Fisk	16¼	17⅞	20⅛	15⅝
do. 1st pfd.	66½	76	82½	66½
General	298	270	298	236
do. pfd.	101	101½	102	99½
Goodrich	96⅛	97⅛	105¾	87⅛
do. pfd.	113	115⅛	115⅛	113
Goodyear Com.	149	130	151⅞	112
do. pr. pfd.	104¼	103	104⅞	102
Hood	24½	26	27¼	21
India	65	64	73	39
Intercontinental	11⅜	12⅝	14¼	10⅜
Kelly Springfield	19	20¼	24	18
do. 1st pfd.	93	88	100	88
Lee	21	21¼	25	19¼
Miller	28¼	24⅞	28¾	22½
do. pfd.	78⅞	75	83	75
Mohawk	59	57½	66	57
do. pfd.	87½	87½	90½	81
Norwalk	5⅛	5¼	6⅛	5
Seiberling	58½	59	65	51¼
do. pfd.	106½	107¼	107⅞	105¼
U. S. Rubber	63⅞	61	65	42
do. pfd.	89¾	87½	92½	77

SCHRADER ISSUES PAPER FOR ITS DISTRIBUTORS

Schradertown News, a monthly picture paper published by A. Schrader's Sons, Inc., tire valve and gauge makers of Brooklyn, N. Y., made its bow to the automotive world late in February when copies of the first issue were mailed to more than 110,000 Schrader dealers. The new publication is primarily a newspaper of general interest to automobile accessory dealers and follows in appearance the leading tabloids with plenty of pictures and stories.

The Schradertown Band, new radio feature which Schrader is sponsoring every Friday night over the Red network of the National Broadcasting Company, is featured in the first issue. Another story described the $1,000 prize contest which Schrader is conducting among its dealers, any dealer selling the company's products being eligible to enter.

For the dealer who arranges the best window, counter or other display of Schrader products, there is a check for $250. Second prize is $100 and third, $50. Regional awards, of which there are 18, will also be distributed in amounts of $25, $15, and $10 respectively. In addition, there are 10 honorable mention awards of $5 for each of the six regions. The contest, which has already begun, will end May 15.

CABOT BUILDING TWO NEW CARBON BLACK FACTORIES

Godfrey L. Cabot, Inc., is starting construction of two new carbon black factories in Texas, one at Kingsmill and one in the new oil field of Moore County. This will make five Cabot factories in Texas. The factory at Skellytown is the largest carbon black factory in the world and the Pampa factory is either second or third largest.

The only gas used in these factories is the waste product from oil wells which would otherwise be blown into the air. Cabot has gas purchase contracts covering over forty-five thousand acres in the heart of the Panhandle Field, thus giving assurance of a gas supply for a much longer period than is usual at other carbon black plants.

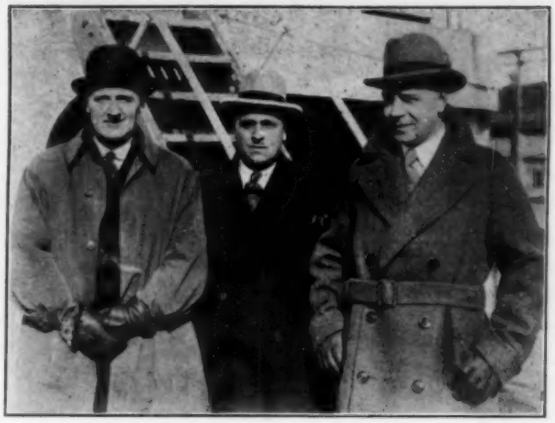
Godfrey L. Cabot, Inc., owns 560 miles of pipe lines which carry over three per cent of all the gas consumed in the United States. Besides the gas used in its own factories, the company sells over $2,000,000 worth of gas yearly.

Swedish Footwear Engineer Here

Algot Carlander, chief engineer of the Helsingborgs Gummifabriks A. B. of Helsingborg, Sweden, paid a recent visit to the rubber footwear factories of New England, comparing American production methods with those of his own country. He reports business as being good in his country, production being about 30,000 pairs per day in the Helsingborg plant, and he says that, although wages are lower in Sweden, this is offset by the greater production of the American worker. Among the plants he visited were those of the Firestone Footwear Company, the Hood Rubber Company, and the Converse Rubber Company.

GOODYEAR MEN VISIT AKRON FOR FIRST TIME

These three foreign managers of the Goodyear Tire & Rubber Company, shown here arriving at New York on the S.S. President Harding, are now making their first visit to America. From left to right are Stanley Kershaw, Dublin; W. H. O. Steer, London; and A. G. Robertson, Glasgow.



Firestone Entertains Curtis

A reception in honor of Vice-President Charles Curtis was held at the home of Harvey S. Firestone, president of the Firestone Tire & Rubber Company, at Miami Beach, Fla., on March 15. Among those invited were Senator William H. King of Utah, Senator Robert M. La Follette of Wisconsin, Adolph Ochs, Charles B. Dillingham, John Golden, "Judge" Walter C. Kelly, former Senator James Hamilton Lewis, John Hertz, Colonel Robert W. Stewart, Barclay J. Warburton, and many other prominent visitors to Miami Beach.

Nobil Hurt in Accident

Morris Nobil, president of the Summit Rubber Company, Akron, O., was one of three men injured when his sedan crashed into a Canton-bound bus a half a mile south of Ellet, a suburb of Akron, on March 9. Mr. Nobil's injuries were reported as a fracture of the left leg, a possible fracture of the right jaw and lacerations.

Students Visit Akron Plants

A group of 18 students of the University of Pennsylvania made an inspection tour of the factories of the Goodyear Tire & Rubber Company at Akron on March 16 as a part of a three-day visit to industrial plants in the Cleveland area. The party plans further visits in Pittsburgh, St. Louis, Chicago, Keokuk, Detroit, and Niagara Falls before their return to the university classrooms.

Goodrich Awards Contract

The B. F. Goodrich Company has awarded to the general contracting firm of Batson, Cook & Company the contract for the enlargement of the Martha Mills at Silvertown, Ga.; to accommodate 80,000 spindles. The main building will be enlarged, a warehouse erected, and about 450 homes for workers built at a total cost of more than $1,500,000.

Lee California Branch

The Lee Tire & Rubber Company has occupied the one-story and mezzanine building at 240 West Fifteenth street, Los Angeles, Cal., where it will conduct its retail tire business for the city and surrounding territory. The lease was drawn for a term of five years, the total rental being approximately $15,000.

GILLETTE RUBBER VOTES TO INCREASE ITS CAPITAL

The Gillette Rubber Company, Eau Claire, Wis., voted on March 15 to increase its capital stock from $1,290,000 to $3,000,000. Under the plan proposed, the present stock will be changed to no par value and 100,000 shares of additional no-par common will be issued.

An increase of 1,000 tires and tubes in the daily production of the Gillette company will be provided with the completion of additional production units. The total output of the company will then be brought up to the 10,000-mark for tires and almost an equal output for tubes.

Roessler & Hasslacher Move

The Roessler & Hasslacher Chemical Company will move to larger headquarters at 10 East 40th Street, New York City, on or about April 1. The building is located conveniently near the Grand Central, Pennsylvania and Baltimore & Ohio stations. At the present time the company is at 709 Sixth Avenue.

Seiberling Declares Dividend

The Seiberling Rubber Company has declared the regular quarterly dividend of $2 on its preferred stock. This dividend is payable April 1 to stockholders of record at the close of business on March 20.

Chemical Society to Meet

The 77th meeting of the American Chemical Society will be held in Columbus, O., from April 29 to May 3. Meetings of the Rubber Division will be held in the Ohio State University chemical laboratory.

CATALPO

for

Inner Tubes

Rubber News Around the World

BRITISH WRITER URGES RUBBER FOR GAS MAINS

Following the recent explosion that tore up London streets for more than a mile, David J. Smith, M. Inst. A. E., of Oxford, has suggested the use of rubber for gas and water mains through the city. He urges that cast iron pipes have proved unsuitable and that rubber mains would be unaffected by vibration and would last longer than those of metal.

"In view of the daily list of burst gas and water mains," he declares, "with the attendant dislocation of traffic and, in some cases, loss of life, it is time that the question of the material used for these pipes should be examined. No more unsuitable material than cast iron, of which the majority of the pipes are made, could be found, as it is one of the most brittle metals and is never used in places where it is likely to be exposed to shock or vibration in other branches of engineering. Even steel mains in time tend to become crystallized under vibration and can not be relied upon after some years' service. This metal is much more prone to oxidization than cast iron, and the coatings used to prevent this are not always to be relied upon.

"Some years ago I had to carry a large supply of gas under a very temporary road and chose wire-embedded rubber hose as the gas main. This, as in many other 'temporary' works, was in use far longer than had been intended, and when taken up after about ten years' service was found to be in perfect condition, although the looseness of the material in the road allowed much of the weight and all the movement and vibration to come upon the hose.

"This form of hose can be obtained in any size and to carry any pressure, and is equally suitable for gas or water. No amount of vibration would affect it, and it will stand a great external crushing strain. Leakages through either defective joints or cracks would be out of the question, and the life would probably be longer than that of metal pipes, if buried in moist earth. Under modern traffic conditions, the streets of our towns vibrate like the prongs of a tuning fork, and cast iron has plainly indicated, by the enormous number of failures, that it is not a suitable material to withstand it."

Rubber Institution Meeting

The London and District Section of the Institution of the Rubber Industry will hold its regular monthly meeting on April 8 at the Blackfriars Theatre, London. The title of the paper to be read before the members at this session has not as yet been announced.

The Seiberling Rubber Company of Canada, Ltd., Toronto, Ont., plans the construction of a one-story addition to its rubber factory on Paton Road in that city. The cost of the expansion is estimated at $40,000.

Firestone Sued in England For Use of Company Name

The Firestone Tyre & Rubber Company, Ltd., has become involved in an unusual court action, due to a suit for damages brought by Jack Firestone, a general merchant of Manchester, for the use of the company name as a telegraphic address. It was the intention of the company to use the cable address of Firestone, Manchester, but British Post Office regulations require that the consent of any persons of that name be first secured.

At the first hearing of the case, Jack Firestone testified that the tire company had approached him through a representative for the purpose of obtaining the consent of all the members of the family in Manchester at remuneration sums ranging up to £50. William Young, Manchester manager for the company, stated that the consent of the Post Office had been secured without the agreement of those of the same name.

Canadian Goodrich to Build

The Canadian Goodrich Company plans an addition to its rubber and tire factory at Kitchener, Ont., that will cost approximately $100,000, according to an announcement by J. W. Jordan, manager. Rapidly increasing business that the present capacity of the factory can not meet forced the expansion.

TIRE OUTPUT INCREASED BY CANADIAN GOODYEAR

During the month of February the Goodyear Tire & Rubber Company of Canada turned out 10,500 tires a day and about the same number of tubes, representing an increase of approximately 20 per cent over the 1928 average of 9,000 per day. The company has installed machinery and equipment necessary for this increase in the extension recently added to its Canadian plant.

During the year ended September 30, 1928, profits on the common stock were equal to $16.57 a share, and a 20 per cent increase in profits for 1928-29 in proportion to the advance in volume of output would bring earnings up to approximately $20 a share. Even without the increase in facilities for production, the company made a start toward higher earnings in the first quarter of the current fiscal year, ended December 31, 1928.

"The first quarter of our fiscal year," reports C. H. Carlisle, president of the company, "has exceeded any other similar quarter both in earnings and volume of business. We anticipate that this will be a good year for Goodyear and profitable to Goodyear shareholders."

RUBBER FIRMS EXHIBIT AT BRITISH INDUSTRIES FAIR

Exhibits by rubber manufacturing companies and rubber trade associations at the British Industries Fairs, which closed March 1 after having enjoyed the largest attendances in their history, were more extensive than in previous years and drew considerable attention. The Rubber Growers' Association maintained a display, the feature of which was six framed panoramas depicting a plantation scene, rubber roadways, rubber footwear, rubber belting, the use of rubber as lining for ball mills and chutes of dredgers, rubber upholstery, etc.

The Cable Makers Association had a cooperative exhibit to illustrate various types of cable used for power and lighting purposes, as well as some of the more ordinary types of underground telephone cable. Cutlass rubber bearings and sealing rings and rubber compounds to prevent corrosion, erosion and abrasion were the principal features of the booth of the British Goodrich Rubber Company, Ltd. R. & J. Dick, Ltd., displayed their Dickbalata belting, Dixit belting and Dickbalata patent element driving ropes, and other leading American and British companies had attractive booths.

LONDON BOROUGH URGES BARRING SOLID TIRES

The Council of the City of Westminster, London, has carried a recommendation by its Traffic Committee to urge the Minister of Transport to consider the advisability of requiring all mechanically propelled vehicles in London to be provided with pneumatic tires.

Councillor F. G. Ridler said that this would be no remedy for accidents, though it might prevent damage to roads and buildings. Considering that fatal street accidents in London had nearly doubled since 1918, and that the number of persons injured had more than trebled in that time, he said that this side of the question should be considered.

Councillor Mrs. Ridley Smith said that pneumatic tires only meant quicker movement, whereas what was wanted was to slow down London traffic. Despite this objection, the recommendation was carried.

CATALPO

for

Flexing

Names in the News

F. J. ARLING, manager of the New Orleans, La., branch of the Kelly-Springfield Tire Company, returned recently from a visit to dealers located in Florida, southern Louisiana and southern Mississippi. He found collections as well as sales unusually good through this territory.

JOHN FLYNN, for 20 years connected with the Williams Foundry & Machine Company, Akron, O., has joined the Franz Foundry & Machine Company, Barberton, O., as assistant superintendent. Mr. Flynn entered the mold and machine business under JIM BENNETT and succeeded GEORGE HERDMAN, as superintendent of the Williams plant in 1914, in which post he has served until now.

LOUIS J. SCHOTT, president and organizer of the Northern Rubber Company, Akron, O., celebrated his 20th anniversary in the tire and rubber industry last month. Mr. Schott first started work with the Firestone Tire & Rubber Company in February, 1909, and in 1916 formed the Amazon Rubber Company with the late LOUIS SMITH.

C. W. SEIBERLING, vice-president of the Seiberling Rubber Company, spoke on "The Dollar Value of Friendship," before the Optimist Club of Akron on February 20. To emphasize the importance of his subject, he traced the friendships between his brother, F. A. SEIBERLING, president of the company, and business men and financiers, which in more than one instance had saved the concern from ruin.

J. W. THOMAS, vice-president and general manager of the Firestone Tire & Rubber Company, arrived at Miami Beach, Fla., on March 6. He is accompanied by Mrs. Thomas and their daughter Jean and will occupy the Firestone guest house during their visit in Miami.

COLONEL C. M. PIPER, formerly sundry sales manager of the Goodyear Tire & Rubber Company, left Akron on March 1 to become special assistant to the sales manager of the Fisk Rubber Company, Chicopee Falls, Mass. He was given a farewell party by the Akron post of the American Legion in which he has been active.

GARRETT BURGESS has announced his resignation as chief power and mechanical engineer of the Detroit plant and consulting engineer of the tire division of the United State Rubber Company. Mr. Burgess, who was national president of the Power Engineers of America a few years ago, and who has given hundreds of talks on safety and engineering, will enter the consulting sales and service fields of engineering under the name of Garrett Burgess, Inc., with offices at 5050 Joy Road, Detroit, Mich.

FRANK A. SEIBERLING, president of the Seiberling Rubber Company, will be one of the members of the state-wide finance committee which will serve in a campaign to raise $50,000 for the Ohio Public Health Association.

W. C. YOUNG, manager of the areonautics department of the Goodyear Tire & Rubber Company, spoke on March 9 before the members of the Men's Club of St. Philip's Protestant Episcopal Church, Cleveland, O. He discussed the future of airships in the transportation problems of the world.

L. C. KIMBERLY of the Goodyear Tire & Rubber Company received $150 for a prize winning suggestion for plant efficiency on March 6. Other awards totaling $540 were distributed among 63 employees.

A. H. SMITH of the Rubber Service Laboratories Company, Akron, O., chairman of Rubber Division of the American Chemical Society, sailed late last month for a business trip through Europe that will keep him abroad for several months.

WILLIAM C. MOORE of Minsch, Monell & Company, Inc., investment bankers, has been posted for membership on the Rubber Exchange of New York. Minsch, Monell & Company, Inc., are members of the Investment Bankers' Association.

HARRY THATCHER DUNN, president of the Fisk Rubber Company, Chicopee Falls, Mass., arrived at Miami Beach, Fla., for a stay of several weeks.

CONGRESSMAN FRANCIS SEIBERLING, a director of the Goodyear Tire & Rubber Company, spoke before members of the Akron Real Estate Board on March 11 on the subject of the Y. M. C. A. and Y. W. C. A. campaign. In the course of his talk, he described his experiences at the inaugural ceremonies at Washington.

H. STUART HOTCHKISS, president of the United States Rubber Plantations, Inc., and vice-president of the United States Rubber Company, is now in Singapore on a tour of inspection. He reports that his company has proved the value of bud grafting and that yields as high as 1,000 pounds an acre are indicated on experimental areas on its plantations.

RUSSEL V. CLINE, assistant advertising manager of the Firestone Tire & Rubber Company, and MISS HELENE K. DONALDSON, daughter of MR. AND MRS. CHARLES W. DONALDSON, of Hollywood, Cal., were married March 16 at Chicago. They will return to Akron from their honeymoon on April 15.

M. F. BEHAR has been appointed advertising manager of the Quigley Furnace Specialties Company, 26 Cortlandt Street, New York City, makers of refractory materials for furnace construction and maintenance and of acid and alkali resisting cements and solutions. He was advertising manager of the C. J. Tagliabue Manufacturing Company since 1924 and, in addition to being an advertising man, is a mechanical engineer and has been a contributor to the Encyclopaedia Britannica, to engineering handbooks and to technical magazines.

ALBERT VINCENT and J. H. BRUCE, managing director and partner, respectively, of J. R. Cox & Company, Firestone tire distributors in British East Africa, were recent visitors at the Akron factories of the Firestone Tire & Rubber Company.

H. E. AMMERMAN, of the Goodyear Tire & Rubber Company, will direct a new course in salesmanship in the Akron University evening school. The course will consist of 15 meetings to be held every Monday night and illustrated by demonstration sales.

CONGRESSMAN FRANCIS SEIBERLING, a director of the Goodyear Tire & Rubber Company, has accepted the general chairmanship of the joint Y. M. C. A. and Y. W. C. A. building fund campaign executive committee. The campaign will be held from April 9 to 19.

NELSON KENNEDY has been appointed vice-president of the Ken-Wel Sporting Goods Company, Utica, N. Y., manufacturers of rubber and other athletic accessories. He was formerly head of the eastern sales department of the company.

DR. KARL ARNSTEIN, chief engineer of the Goodyear-Zeppelin Corporation, gave the first lecture in the evening course in aerodynamics at Akron University on February 25. The course was outlined under the supervision of Dr. Arnstein and is being directed by DR. W. B. KLEMPERER of the Goodyear-Zeppelin staff.

E. B. BESAW, vice-president and general manager of the Firestone Tire & Rubber Company of Canada, Ltd., recently paid his first visit to British Columbia for the purpose of attending a convention of Vancouver Firestone dealers.

R. B. STRINGFIELD, chief chemist of the Goodyear Tire & Rubber Company of California, has resigned to accept a similar position with the Golden State Rubber Mills, Los Angeles, Cal. He will head all technical activities at this organization, which was formerly known as the Long-Turney Corporation.

MR. AND MRS. HARVEY FIRESTONE, JR., gave a dinner-dance at the Deauville Casino, Miami Beach, Fla., in honor of MR. AND MRS. EDSEL FORD. The party, which was attended by many well known New York, Detroit and Akron people, was given in the open at the head of the pool, musical entertainment being furnished by gondoliers.

Current Crude Rubber Items

RUBBER FUTURES DROP IN EXCHANGE TRADING

Decline in Prices With Heavy Sales at End of Period Marks the Fortnight Despite Large Consumption Figures and Decrease in Stocks.

IN the face of apparently bullish developments, crude rubber future prices on the Rubber Exchange of New York showed a marked decline during past fortnight. At the end of the period the tendency seemed to be for prices to drop still further, but with an expectation of regaining their losses as the statistical position is more fully realized.

The spot price quotation, which stood at 25.90 cents a pound on March 4, had dropped to 24.20 cents by the end of the period, and the future positions showed declines of equal amount. Sales volume, however, was most active during the recessions, and on March 14 reached the large total of 2,767 contracts while the prices sagged from 50 to 90 points below those of the preceding day.

London Quotations Fall

Declines in London prices preceded the recessions on the New York Exchange in most cases, and this factor was augmented by the calling of margin accounts in commission houses as the period closed. Rumors that a prominent Singapore house was in difficulties also had their effect on trading in the final days of the session.

The knowledge that the first three months of 1929 are to be the greatest in American rubber consumption, the fact that rubber stocks on hand and afloat to the United States showed a decrease at the end of February, and the news that February automobile production had reached the record total of 466,084 cars in this country failed to halt the bearish activity for the moment. It is expected, however, that these factors will stimulate the market toward a recovery next month.

The table below indicates the daily fluctuations in prices on the Exchange and the daily volume of sales.

Rubber Exporters Organize

The rubber exporters in the Amazon intend to organize a South American Rubber Congress to study the means of developing the industry, especially by the establishment of mills and factories at Manaos and Para. According to the American Brazilian Association, steps toward this end are being taken at the present time and an organization will soon be effected.

MADERA COUNTY TESTED FOR GROWING OF RUBBER

A test of the possibilities of land in Madera County, Cal., for rubber growing, which will be continued for about four years, is being launched by the American Rubber Producers, Inc., a subsidiary of the Intercontinental Rubber Company. The test is to be conducted on the Joe Avellar ranch, nine miles north of the town of Madera.

George Marchbank, Madera County horticultural commissioner, has completed an inspection of 10,000 plants of the guayule rubber shrub, which is the plant to be used in the experiments. H. R. Hastings of Salinas, traveling superintendent of the company, will have charge of the work in Madera County. At the present time the principal Californian development of the Intercontinental Rubber Company is in the Salinas Valley of Monterey County.

T. L. CARNAHAN IS HELD BY BANDITS IN MEXICO

The American Embassy at Mexico City has been informed that T. L. Carnahan, American mining engineer, was kidnapped by bandits on March 18 at La Noria, a mining village in the state of Zacatecas, and is being held for ransom. He is a brother of George H. Carnahan, president of the Intercontinental Rubber Company.

The Intercontinental Rubber Company has a guayule reduction plant at Torreon, Mexico, the centre of the present clashes between federal and rebel troops, and wide areas of guayule properties in the vicinity. George H. Carnahan is at present in Europe.

BRITISH SEEK REDRESS FOR RUBBER LANDS IN LIBERIA

Properties now in the possession of the Firestone Plantations Company were discussed in the House of Commons last month when Sir Hamar Greenwood asked Sir Austen Chamberlain, British Foreign Secretary, if the government's attention had been drawn to the action of Liberia in expropriating the property and rights of the Liberian Rubber Corporation without legal action. This move on the part of the Liberian government is said to have deprived English creditors and shareholders of the corporation of the value of a rubber estate upon which nearly $500,000 had been spent in development.

Sir Austen, in a written reply, stated that the matter had been considered and that the Liberian government maintains that such creditors have a remedy open to them in the Liberian courts. The British government has tried to ascertain whether this is satisfactory to the creditors or whether they would prefer that the Liberian government submit the case to arbitration, according to Sir Austen, but no response has as yet been received,

RUSSIA EXPERIMENTING TO GROW ITS OWN RUBBER

It is reported that a series of successful experiments in planting rubber trees has been completed in the Northern Caucausus section of Russia. It has now been decided to repeat these experiments on a larger scale in the districts of Salak, Tersk and Stavropol.

The plants to be raised are the Mexican guayule and two local plants known as Hondrilla and Asclepias. Three expeditions are to be sent into the steppes and plains of the North Caucasus region to examine the wild rubber producing plants of the districts. The Soviet *Economic Review* states, "While the Soviet rubber industry has experienced no difficulties in importing the crude rubber required, it is felt that measures should be taken to establish domestic production of crude rubber in the southern sections of the country."

Closing Prices on Rubber Exchange of New York, Inc.

FROM MARCH 5 TO MARCH 19, 1929

		Spot	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Sales*
Mar.	5	25.80	25.80	26.00	26.40	26.40	26.50	26.60	26.70	26.70	26.80	26.80	26.90	27.00	572
	6	25.70	25.70	26.00	26.30	26.40	26.50	26.60	26.70	26.70	26.70	26.80	26.90	27.00	462
	7	25.40	25.40	25.70	25.90	26.00	26.10	26.20	26.30	26.30	26.40	26.40	26.50	26.60	419
	8	25.20	25.20	25.40	25.50	25.70	25.80	25.80	25.90	25.90	26.00	26.20	26.30	26.40	790
	9	25.20	25.30	25.60	25.70	25.90	26.00	26.10	26.20	26.20	26.30	26.30	26.40	26.50	162
	11	25.50	25.50	25.80	26.00	26.20	26.30	26.40	26.50	26.50	26.60	26.70	26.80	26.90	471
	12	25.40	25.40	25.60	25.80	25.90	25.90	26.00	26.20	26.20	26.30	26.40	26.50	26.60	528
	13	25.10	25.10	25.30	25.50	25.60	25.70	25.80	25.90	26.00	26.10	26.10	26.20	26.30	835
	14	24.60	24.60	24.70	24.80	24.90	25.00	25.00	25.10	25.10	25.20	25.20	25.30	25.40	2,767
	15	24.70	24.70	24.90	25.00	25.10	25.20	25.30	25.30	25.40	25.50	25.60	25.70	25.80	1,289
	16	24.40	24.40	24.60	24.70	24.80	24.90	24.90	25.00	25.10	25.20	25.30	25.40	25.50	1,599
	18	24.40	24.30	24.60	24.80	24.90	25.00	25.10	25.20	25.20	25.40	25.40	25.50	25.60	1,291
	19	24.20	24.20	24.40	24.50	24.70	24.80	24.80	24.90	24.90	25.00	25.10	25.20	25.30	585

*In lots of 2½ tons each

CATALPO

for

Treads

Rubber Goods and Specialties

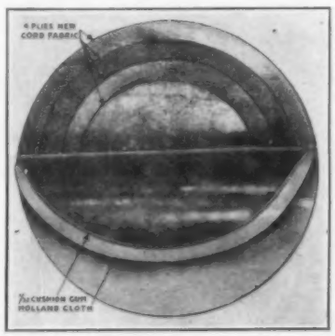
Lee Super De Luxe Tire

As its contribution to the rapidly growing number of "super" tires, the Lee Tire & Rubber Company, Conshohocken, Pa., is offering the new Lee Super De Luxe casing. This tire is said by the manufacturer to possess new factors in wear and riding quality. It has a deep and heavy, yet flexible, tread with an all-season non-skid de-

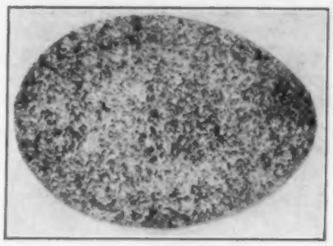
sign that is claimed to be capable of lasting for years in ordinary use. The supporting structure is made from high grade combed cord fabric, and the entire casing is carefully balanced to insure good traction and freedom from skidding.

Tire Patch Materials

The United States Rubber Company, 1790 Broadway, New York City, is introducing a new system of tire repairing based on the use of "U. S." Royal tire patches, which are made of four and six plies of new cord fabric of full strength. The cords in the alternate plies run in opposite directions, similar to the cords in a cord tire. The patches have been properly cured and are faced with cushion gum, ready to apply to



the injury. A shorter curing time is made possible, as the fabric part of the repair has already been cured, and it is necessary only to cure the cushion gum facing of the patch. Only five sizes of patches are required to repair all injuries ordinarily encountered. By using these patches, the manufacturer claims, a minimum amount of material and labor is required, resulting in a lower cost repair.



Rubber Easter Egg

For the Easter season, the Faultless Rubber Company, Ashland, O., has designed this Humpty-Dumpty mottled egg. It has a highly veneered finish that will not check and is extremely attractive. These eggs are mottled in contrasting colors on three assorted color bases, white, yellow and orange. It is made of sponge rubber and is being pushed by the company for the current season.

Rubber Shaving Brush

A rubber bristle shaving brush is the newest product offered by Rubber Brushes, Ltd., 125 High Holborn, London, England, under their trade mark "Ruba." According to the manufacturer, these brushes must not be confused with the moulded rubber brush.

The manufacture is carried out on somewhat similar lines to the ordinary bristle brush, but its ultimate life is said to be considerably longer. This shaving brush lathers readily and at the same time gently massages the soap into the beard. It is attractive in appearance and said to be comfortable in use.

Goodrich Aeroboard

Among products available for aircraft construction is "Aeroboard," a rubber lumber being produced by the B. F. Goodrich Company, Akron, O. The material, which comes in a variety of forms, consists essentially of two sheets of thin hard rubber with a central filling of rather hard sponge rubber. Fabric is also imbedded for added strength. The material also can be made with one surface of fabric or metal. In the latter form, the metal is held to the rubber by the "Vulcalock" process, which is said to virtually weld the two materials together. "Aeroboard" has also become popular for speedboat construction because of its lightness combined with great strength, its waterproof qualities, and its ease of handling.

Gillette Ambassador Tire

Built of the highest quality materials, the new Ambassador balloon tire of the Gillette Rubber Company, Eau Claire, Wis., is constructed oversize to insure against overloading. Live rubber and Egyptian cotton are used in its construction, and the tread is unusually heavy and extends from bead to bead. The non-skid is a new design and the tire

may be run in either direction with equal wear. The design runs two inches beyond the running strip on either side to insure more wear against ruts. A thin cushion of rubber is applied between each ply of cord to eliminate friction and fast wear.

Double Back Cushion

Included in the line of rubber cushions manufactured by the Eno Rubber Corporation, 1726 South Los Angeles Street, Los Angeles, Cal., is this double wedge back and seat cushion for large office chairs or other seats where comfort is desired. Offering rest for both the back and seat of a chair, it is

said to be recommended by physicians. The pneumatic cushion is easily inflated and, when deflated, can be carried in a small pocket. If punctured, it can be vulcanized in the same manner as an automobile inner tube. The weight of this combination cushion is 30 ounces.

GOODRICH WILL CONSTRUCT FLORIDA SERVICE STATION

Plans for the construction of a master service station building in Jacksonville Fla., by the B. F. Goodrich Rubber Company were announced last month by I. S. Hudmon, Goodrich distributor for that district. The rubber company has leased for a period of 20 years a 105-foot square at the corner of Adams and Lee streets, the deal being consummated two weeks ago with the return of the signed papers from the Goodrich home office at Akron.

Under the present tentative plans an expenditure of approximately $35,000 is contemplated in the construction of a one-story building. However, it is expected that a two or three-story structure may be erected on the site later if the volume of business warrants the expansion.

Operates Rubbercraft Plant

The Rubber Products Corporation, incorporated in New Jersey, is now operating in the factory formerly occupied by the Rubbercraft Corporation at Doylestown, Pa. The plant comprises a four-story building which is being furnished with new equipment for the manufacture of molded goods, automobile inner tubes, golf ball centres and other rubber articles. William C. Ehrenfeld, formerly head of the Dural Rubber Corporation, Flemington, N. J., is manager of the company.

Crescent Erects Addition

A three-story brick and steel factory addition is being erected by the Crescent Insulated Wire & Cable Company, Trenton, N. J. The building will be 100 by 125 feet in size and will cost approximately $60,000.

The Philadelphia Rubber Works Company

Manufacturer of

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of

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GOVERNMENT EXAMINATION FOR JUNIOR TECHNOLOGIST

The United States Civil Service Commission has announced an open competitive examination for the position of junior technologist, with rubber technology as one of the optional subjects on which practical questions will be asked. The examination is to fill vacancies in the Bureau of Standards, Department of Commerce, in the Geological Survey, Department of the Interior, and in other positions requiring similar qualifications. The entrance salary is $2,000 a year, and higher-salaried positions are filled through promotions.

Competitors will be rated on general chemistry, elementary physics, mathematics through calculus, and one optional subject, which may be either rubber technology, textile technology, petroleum technology, paper technology or ceramics. Applications must be filed not later than April 9.

Gates Erects New Mill

The Gates Rubber Company, Denver, Col., manufacturers of tires, fan belts, hose and other rubber products, has broken ground for a new mill, to be a single story structure, 83 by 125 feet in size, and reported to cost close to $100,000. The contract for building has been let to the Mead & Mount Construction Company, First National Bank Building, Denver. John M. Gardner is the architect, and Shankland, Ristine & Company are consulting engineers.

New Seiberling House Organ

The Seiberling Rubber Company of Canada, Ltd., Toronto, Ont., is mailing to tire dealers throughout the Dominion the first issue of its new house magazine, *The Seiberling Broadcaster*. It is the intention of the company to print in every issue tire repairing suggestions, selling hints, advertising ideas and news of dealers.

St. Clair is Expanding

The St. Clair Rubber Company, Detroit, manufacturers of rubber cloths and fabrics, now has its factory at Marysville, Mich., running to full capacity to meet the demand for its products. A new building 200 by 60 feet in size was recently constructed, and the company is considering adding further floor space in the future.

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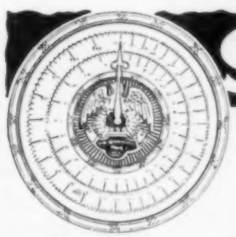

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LATE MARKET PRICES

Crude, Scrap & Reclaimed Rubber - Cottons and Fabrics

NEW YORK, MARCH 19, 1929

COTTON

BULLISH enthusiasm expressed in a wave of buying in the cotton market has carried prices upward nearly a cent and a half a pound in the past three weeks, and profit taking on the part of holders of low-priced cotton is now causing temporary recessions. The market is becoming adjusted to the new price level, and any material declines are not looked for in view of the favorable statistical position.

With consumption of the United States and the rest of the world at a high rate, a situation has developed in cotton which has seldom if ever existed in the hsitory of the trade. The Garside Cotton Service estimates the world used 7,616,000 bales for the first six months of the season and the daily rate of absorption is greater with each succeeding month. February consumption in the United States is estimated at 594,000 bales as compared with 573,000 bales a year ago. Meanwhile, conditions are not favorable for an abundant yield of cotton in the present year, and bullish influences are making the most of the situation.

High, low and closing price quotations as of March 19 were as follows:

	High	Low	Close	Close
		Mar. 20		Mar. 6
March	21.01	20.85	20.89	20.92
May	20.97	20.77	20.82	20.96
July	20.47	20.30	20.33	20.45

Tire Fabrics

Although prices in the tire fabric market have advanced in sympathy with the rise of cotton and have remained firm, there has not been any great activity in the trading of recent days. Consumption continues at a high rate with tire production at a higher sustained level than ever before in history.

CORD				
Peeler, carded, 23/5/3	lb.	.47	@	.48
Peeler, carded, 23/4/3	lb.	.48	@	.49
Peeler, carded, 13/3/3	lb.	.44	@	.45
Peeler, carded, 15/3/3	lb.	.44½	@	.45½
Egyptian, carded, 23/5/3	lb.	.52	@	.53
Egyptian, combed, 23/5/3	lb.	.58	@	.59
CHAFERS				
Carded, American, 8 oz.	lb.	.40	@	.41
Carded, American, 10 oz.	lb.	.41	@	.42
Carded, American, 12 oz.	lb.	.41½	@	.42½
Carded, American, 14 oz.	lb.	.40	@	.45
LENO BREAKER				
Carded American, 8¼ oz.	lb.	.40	@	.45
Carded American, 10¼ oz.	lb.	.40	@	.45
SQUARE WOVEN				
Carded American, 17¼ oz. 28-11 ply	lb.	.47	@	.48
Carded American, 17¼ oz. 10-ply	lb.	.40	@	.41

Sheetings

Price advances up to a quarter of a cent a pound were the only feature of the sheetings market in the past fortnight. Trading has not been in large quantities. Latest price quotations follow:

40-inch, 2.50-yard	yd.		@	.13
40-inch, 2.85-yard	yd.	.11⅝	@	.11½
40-inch, 3.15-yard	yd.		@	.11⅞
40-inch, 3.60-yard	yd.		@	.09⅞
40-inch, 3.75-yard	yd.		@	.08¾
40-inch, 3.75-yard	yd.		@	.07¾

Ducks

Some of the lower grades of enameling ducks sold during the past two weeks at 36½ cents a pound, but the better grades are being held firmly at a higher figure. Other types of ducks have been only moderately active through the fortnight with prices unchanged. Late quotations were as follows:

Belting and Hose	lb.	.37	@	.38
Enameling	lb.	.36½	@	.38
Single filling	lb.	.14¾	@	.16½
Double filling	lb.	.17½	@	.18½

RECLAIMED RUBBER

Consumption of reclaimed rubber by American manufacturers totaled 37,299 long tons for the first two months of 1929, as against 34,942 tons for the same period last year and 26,798 tons during January and February, 1927. Stocks on hand during the first two months of the current year, while slightly higher than in 1928, are considerably lower than stocks reported for the same period in 1927 when consumption was 30 per cent lower than at present. Prices during the past fortnight, while substantially the same as those of two weeks ago, have been slightly weaker in spots and sales at a fraction of a cent below the listed figures have been frequent. The latest quotations are as follows:

High Tensile				
Super-Reclaim No. 1 Black	lb.	.13	@	.13½
Super-Reclaim No. 2 Black	lb.	.12	@	.12½
High Tensile Red	lb.	.13	@	.13½
Shoe				
Unwashed	lb.	.07¼	@	.07½
Washed	lb.	.10	@	.10¼
Tube				
No. 1 (Floating)	lb.	.14	@	.14½
No. 2 (compounded)	lb.	.11	@	.11½
Tires				
Black, washed		.09¾	@	.10¼
Black, unwashed		.08	@	.08½
Black, selected tires	lb.	.08½	@	.09
Dark Gray	lb.	.10	@	.10½
Light Gray	lb.	.12	@	.12½
White	lb.	.13	@	.13½
Truck, Heavy Gravity	lb.	.07	@	.07¼
Truck, Light Gravity	lb.	.07½	@	.07¾
Miscellaneous				
Mechanical Blends	lb.	.07	@	.07½
Red	lb.	.12½	@	.13

Scrap Rubber

With production and consumption of reclaimed rubber continuing at high levels, the demand for rubber scrap has been steady in tone and prices have not changed materially. The market has been moderately active in nearly all grades. Late prices are as follows:

(Prices to Consumer)				
Auto tire peelings	ton	39.00	@	42.50
Standard White auto	ton	47.50	@	50.00
Mixed auto	ton	24.50	@	25.00
Bicycle tires	ton	20.00	@	22.50
Clean solid truck tires	ton	22.00	@	24.00
Boots and shoes	cwt.	1.40	@	1.55
Arctics, untrimmed	lb.	.00¾	@	.00⅞
Inner tubes, No. 1	lb.	.06½	@	.06¾
Inner tubes, No. 2, compounded	cwt.	4.25	@	4.30
Inner Tubes, Red	lb.	.05¼	@	.05⅜
Air Brake Hose	ton	34.00	@	35.00
Rubber Hose	ton	17.50	@	20.00

CRUDE RUBBER

UNCERTAINTY and irregularity have characterized the market in crude rubber for the past fortnight, bringing prices down to a level two cents a pound less than those quoted at the start of the period. The situation is generally ascribed to an attempt of the market to find its true level after the necessary adjustments following the recent bullish advance, and no major price movement in either direction is likely until the prospective demand and supply relation is more fully revealed.

Domestic consumption for the first two months of the year totaled 84,596 tons as against 68,105 tons for the same period in 1928, and there has been no slackening up in this rate of absorption during March. The first quarter of 1929 will, therefore, be the greatest three-month period in the history of the industry in regard to American rubber consumption.

At the same time consumption is proceeding rapidly in the European countries where the automobile tire industry is fast expanding. This enoromous rate of use of crude rubber is absorbing the recent relatively heavy shipments from British and Dutch Malaya in such a manner that stocks of rubber in consuming countries make practically no gain, the amount of rubber on hand or afloat to the United States as of February 28 showing a decrease from the figure of January 31.

Trading continues to be active, and speculative buying through commission houses, while not big, is nevertheless increasing. Prominent dealers who have been conspicuous sellers of late are presumably covering shorts on the declines. A watchful waiting attitude has been adopted in many directions.

Prices on the New York outside market on March 19 were as follows:

Plantations—			
Ribbed Smoked Sheets—			
Spot-Mar.	.24⅛	@	.24⅜
Apr.-June	.24⅜	@	.24⅝
July-Sept.	.24⅝	@	.24⅞
First Latex, crepe spot	.24⅝	@	.24⅞
Amber Crepe, No. 2	.21⅝	@	.22
Amber Crepe, No. 3	.21½	@	.21¾
Amber Crepe, No. 4	.21¼	@	.21½
Brown Crepe, Clean, thin	.21½	@	.21¾
Brown Crepe, specky	.21¼	@	.21½
Liquid Latex, per gal.	1.00		
Paras—			
Up-river Fine	.24½	@	.21⅝
Up-river Medium	Nominal		
Up-river Coarse	.14¾	@	.15
Acre Bolivian, fine	.24¾	@	.25
Caucho Ball, Upper	.14¾	@	.15
Islands, fine	Nominal		
Centrals—			
Central, scrap	.14½	@	.14¾
Esmeraldas	.14½	@	.14¾
Balata—			
Block, Colombia	Nominal		
Block, Cuidad	.50	@	—

LONDON MARKET

Standard Ribbed Smoked Sheets—Buyers			
Spot-Mar.	@	.12	d
Apr.-June	@	.12¼	d

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—Sellers			
Spot	@	.11⅝	d

The Unexcelled Softener

ARLINGTON MILLS

DEGRAS

PURE WOOL GREASE

The Ideal Emollient for overcoming the surface tension of carbon black and effecting its complete and rapid dispersion in the rubber stock.

W. L. Montgomery & Co.

Sole Selling Agents

10 HIGH ST. BOSTON, MASS.

SINCE 1880 GUARANTEED

Rand RUBBER GOODS

Dress Shields
Rubber Sheetings
Bunny Baby Pants
Sanitary Requisites
Guimps & Brassieres
Randprint Aprons
All Styles Rubber Aprons
Pure Rubber Sheets
Rubber Bibs
Crib Sheets
Bathing Caps
Rubber Specialties
Powder Puff Pockets
Randprint Rubber

SHEET GUM cut to pattern for manufacturers

"They Last Longer"

Made by

RAND RUBBER COMPANY, Inc.

Formerly Brooklyn Shield & Rubber Co., BROOKLYN, N. Y.

Constant Laboratory Research

—plus complete technical control of each step of the manufacturing process—assures absolutely uniform highest quality

AERO BRAND

RUBBER SULPHUR

Air-floated and bolted through silk. A specially prepared sulphur for use in the rubber industry.

Favorable prices for spot shipment or contract. Write Industrial Chemicals Division.

AMERICAN CYANAMID COMPANY
535 Fifth Avenue : New York

EMBOSSING CALENDERS

For Artificial Leather, Oil Cloth, Carriage and Automobile Covers

DRYING MACHINES

with Copper or tinned iron Cylinders for Cotton Ducks, Drills and Sheetings

The Textile-Finishing Machinery Co.

OFFICE, No. 83 EXCHANGE PLACE
PROVIDENCE, R. I.

AKRON-WILLIAMS A-W PRODUCTS

Heater Presses
Molds and Cores
Tubing Machines

THE WILLIAMS FOUNDRY & MACHINE CO.

(Division of National Foundry Co., Erie, Pa.)
AKRON, OHIO

The **GENERAL**

TIRE

—goes a long way to make friends

BUILT IN AKRON, OHIO, BY THE GENERAL TIRE AND RUBBER CO.

LATE RUBBER CHEMICAL PRICES

Accelerators — Colors — Softeners — Compounding Materials

NEW YORK, MARCH 19, 1929

THE first three months of 1929 have been the greatest in the history of the rubber industry in regard to consumption of crude rubber and, consequently, in the use of rubber chemicals and compounding ingredients. Manufacturers of these chemical supplies still have their plants working close to capacity, and reports of factory expansion are frequent. One large manufacturer of carbon black announces that he will build two entirely new plants in Texas for this purpose.

Prices have remained stable through the past fortnight, and there appears no reason for expecting any major fluctuations in the near future. Among the acclerators, Tensilac No. 39 dropped down to a level between 40 and 40½ cents a pound. More activity has developed lately in the use of paraffin in rubber factories, and a list of the different grades and current price quotations has been added to this section.

ACCELERATORS

Organic			
A-7	lb.	.55 @	.59
A-11	lb.	.62 @	.66
A-16	lb.	.57 @	.61
A-19	lb.	.58 @	.62
A-20	lb.	.64 @	.68
Aero-X	lb.	.60 @	.65
Aldehyde ammonia, crystals	lb.	.65 @	.70
Aniline oil, drums, f.o.b. works	lb.	.15 @	.16¼
Cryiene	lb.	.55 @	.65
paste	lb.	.45 @	.55
Di-Ortho-Tolylguanidine	lb.	.42 @	.52
Diphenylguanidine	lb.	.30 @	.36
Ethylidene aniline	lb.	.45 @	.47½
Formaldehyde Aniline	lb.	34 @	.44
Grasselerator 102	lb.		
Grasselerator 552	lb.		
Grasselerator 808	lb.		
Grasselerator 833	lb.		
Heptene	lb.	.40 @	—
Hexamethylene-tetramine	lb.	.62½@	.65
Lithex	lb.	.18 @	.20
Methylenedianiline	lb.	.35 @	.45
Monex	lb.	3.25 @	—
Oxynone	lb.	.68 @	.80
Para-Nitrosodimethylaniline, f.o.b. works	lb.	.92 @	.96
Piperidine-Piperidyldithio-Carbamate	lb.	4.45 @	4.60
R & H 40	lb.	.40 @	.42½
R & H 50	lb.	.40 @	.42½
R & H 397	lb.	.75 @	.77½
Safex	lb.	1.20 @	1.25
Tensilac, No. 39	lb.	.40 @	.42½
Tensilac, No. 41	lb.	.50 @	.52½
Thermic F	lb.	.50 @	.55
Thiocarbanilide, drums	lb.	.26½@	.28½
Thionex	lb.		
Trimene	lb.	.75 @	—
base	lb.	1.20 @	—
Triphenylguanidine	lb.	.58 @	.62½
Vulcanex	lb.		
Vulcone	lb.		
Vulcanol	lb.		
Waxene	lb.	.30 @	.32
Z 88	lb.	.65 @	.69
Inorganic			
Lead, sublimed blue	lb.	.07¾@	—
Lead, white	lb.	.10½@	.12½
Litharge, domestic	lb.	.09 @	—
Magnesia, calcined, light	per 100 lb.	5.35 @	5.45
heavy	per 100 lb.	3.65 @	3.75

COLORS

Blacks (See Compounding Materials)			
Blues			
Prussian	lb.	.32 @	.35
Ultramarine	lb.	.09 @	.20
Browns			
Sienna, Italian	lb.	.05½@	.12½
Umber, Turkey	lb.	.04½@	.07
Greens			
Chrome, light	lb.	.27 @	.31
medium	lb.	.29 @	.32
dark	lb.	.31 @	.34
Chromium Oxide, bbl.	lb.	.34 @	.36
Reds			
Antimony crimson, 15/17	lb.	.44 @	.50
sulphur free	lb.	.50 @	.55
golden 15/17 F.S.	lb.	.20 @	.25
Indian English	lb.	.08 @	.12
Domestic (Maroon)	lb.	.08 @	.12
Oximony	lb.	.13¼@	—
Red oxide, pure	lb.	.10 @	.12
Venetian red	lb.	.03 @	.06
Vermillion, quicksilver, English	lb.	1.85 @	1.95
Whites			
Lithopone, Akcolith	lb.	.05 3/5@	.06
Lithopone, Azolith	lb.	.05¼@	.05¾
Lithopone, Vanolith	lb.	.06¾@	—
Titanox	lb.	.09½@	.10
Cal. Base Pigment	lb.	.10 @	.10½
Zinc Oxide—American Process			
American Azo:			
ZZZ (lead free)	lb.	.06½@	.07
ZZ (leaded)	lb.	.06⅝@	.06⅞
Zinc Oxide—French Process			
White seal	lb.	.11⅞@	—
Green seal	lb.	.10⅞@	—
Red Seal		.09⅞@	—
Yellows			
Chrome	lb.	.15½@	.16½
Ocher, French medium	lb.	.02½@	.06
domestic	lb.	.01½@	.02

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85 @	24.50
Ammonia carbonate	lb.	.10½@	.12
Asbestine	ton	14.75 @	18.00
Barium carbonate	lb.	.03½@	.05
Barium Dust	lb.	.05 @	.06
Barytes southern off-color,	ton	12.00 @	18.00
Western prime white	ton	23.00 @	—
imported	ton	27.00 @	36.00
Basofor	lb.	.04½@	—
Blacks			
Arrow "Aerfloted"	lb.	.08½@	.12½
Bone Black	lb.	.07 @	.08½
Carbon, compressed	lb.	.08½@	.12½
Carbon, uncompressed	lb.	.08 @	.12
Drop Black	lb.	.06 @	.10
Fumonex	lb.	.06 @	.09
Gastex	lb.		
Lamp Black	lb.	.12 @	.40
Micronex	lb.	.09 @	.13
Velvetex carbon	lb.	.04½@	.06
Blanc fixe dry f.o.b. works	lb.	.03½@	.03⅝
Carrara filler	lb.	.01¾@	.02
Catalpo (fact.)	lb.	.02 @	—
Chalk	ton	12.00 @	14.00
Clay, China, domestic	ton	8.00 @	9.00
Aerfloted Suprex	ton	10.00 @	22.00
Congaree, c. l. f.o.b. mine	ton	9.00 @	—
Mineral Flour, c. l. fob mine	ton	20.00 @	23.00
Tensulite		15.00 @	—
Glues, extra white	lb.	.22 @	.26
medium white	lb.	.20 @	.24
Magnesia, carbonate	lb.	.08¾@	.11
Mica, powdered	ton	65.00 @	80.00
Rotten Stone (powdered)	lb.	.02½@	.04½
Soapstone, powdered	ton	15.00 @	22.00
Starch, powdered	cwt.	3.30 @	3.70
Talc, domestic	ton	12.00 @	15.00
Whiting, commercial	cwt.	.85 @	1.00
English cliffstone	cwt.	1.50 @	—
Superfine	ton	10.00 @	12.00
Witco	ton	12.00 @	—
Wood pulp XXX	ton	45.00 @	—
Wood pulp X	ton	25.00 @	—
Zinc Carbonate	lb.	.09½@	.10½
Zinc Stearate	lb.	.24 @	.25

MINERAL RUBBER

Genasco (factory)	ton	50.00 @	52.00
Montezuma, solid	ton	28.00 @	36.00
Montezuma, granulated	ton	32.00 @	42.00
Paradura	ton	62.50 @	65.00
Pioneer, MR, solid	ton	42.00 @	45.00
Pioneer-granulated	ton	52.00 @	55.00
R & H Hydro-Carbon	ton	27.05 @	29.00
Robertson, MR, solid	ton	34.00 @	80.00
M.R. (gran)	ton	38.00 @	80.00

SOFTENERS

Acids			
Nitric, 36 degrees	cwt.	5.00 @	5.25
Sulphuric, 60 degrees	ton	10.50 @	11.50
66 degrees	ton	15.00 @	16.00
Tartaric, crystals	lb.	.37 @	.38
Acids, Fatty			
Stearex	lb.	.15½@	.20
Stearic, double pressed	lb.	.17 @	.22
Alkalies			
Caustic soda, 76%	cwt.	3.76 @	3.91
Soda ash, 58% C.L.	cwt.	1.40 @	
Oils			
Corn, refined, bbls.	lb.	.11 @	.11½
Cottonseed, crude		.08½@	.08¾
Cycline	gal.	.27 @	.34
Degras (c.l. 100 bbls.)	lb.	.03¾@	—
Less c. l. (10-25 bbls.)	lb.	.04 @	—
Lots less than 10 bbls.	lb.	.04¼@	.04½
Fluxrite	lb.	.05 @	.06
Hexalin	lb.	.60 @	—
Acetate	lb.	.70 @	—
Linseed, Raw C.L. bbl.	lb.	.09½@	.10
Palm Lagos	lb.	.07¼@	.07½
Niger	lb.	.07¾@	.08
Vansulol	lb.	.10½@	—
Para-Flux	gal.	.17 @	—
Petrolatum, white	lb.	.08 @	.08½
dark amber	lb.	.03¾@	.03¾
Pine, steam distilled	gal.	.65 @	.70
Resins and Pitches			
Pitch, Burgundy	lb.	.06½@	.07½
coal tar	gal.	.05½@	.06
pine, 200 lb. gr. wt.	bbl.	9.00 @	10.00
Rosin, grade K, 280 lb.	bbl.	8.55 @	—
Pigmentar	gal.	.33 @	.41
Solvenol, drums	gal.	.48 @	.50
Tarol, drums	gal.	.30 @	.35
Tar Retort, 50 gal.	bbl.	12.50 @	13.00
Solvents			
Acetone, pure	lb.	.13 @	
Alcohol denatured, No. 1 bbls.	gal.	.37½@	.44½
Benzol, 90%	gal.	.28 @	—
Carbon bisulphide	lb.	.05½@	.06¼
Carbon tetrachloride	lb.	.06¼@	.07
Motor gasoline, steel bbls.	gal.	.17 @	—
Naptha, solvent	gal.	.35 @	.40
Turpentine, spirits	gal.	.60 @	.64
wood	gal.	.50 @	.54
Waxes			
Beeswax	lb.	.56 @	.58
Carnauba	lb.	.33 @	—
Ceresin, white	lb.	.10 @	.11
Montan, crude	lb.	.07 @	.07½
Ozokerite, black	lb.	.24 @	.25
green	lb.	.26 @	.30
Paraffin (c. l.—f.o.b. N. Y.)			
Yellow crude scale	lb.	.03¾@	
White crude scale 124/126	lb	.04 @	
Refined, 125/127	lb.	.05¾@	
Refined, 128/130	lb.	.05½@	
Refined, 135/137	lb.	.07¾@	
Refined, 138/140	lb.	.08¼@	
Miscellaneous			
RSL Mold Solution	gal.	.75 @	.100

ANTI-OXIDANTS

Albasan	lb.	.70 @	.75
Antox	lb.		
Neozone	lb.		
Oxynone	lb.	.68 @	.80
Resistox	lb.	.54 @	.57
Stabilite	lb.	.64 @	—
VGB	lb.	.55 @	.66

SUBSTITUTES

Black	lb.	.08 @	.14
White	lb.	.10 @	.16
Brown	lb.	.08 @	.15

VULCANIZING INGREDIENTS

Sulphur Chloride (drums)	lb.	.03¼@	.03½
Sulphur flour, Refined, 100% pure (bags)	cwt.	2.40 @	2.75
Commercial (bags)	cwt.	1.75 @	2.10

A Section Devoted to Listings of Leading Producers and Distributors of Raw Materials, Machinery and Equipment, and Supplies for the Rubber Industry.

The Market Place

Chemicals and Compounding Materials — Machinery and Equipment—Crude, Reclaimed and Scrap Rubber—Fabrics—Rubber Products — Consulting Engineers.

Chemicals and Compounding Materials —

ACCELERATORS— X L O
and Diphenyl Guanidine.
Dovan Chemical Corp.
30 Church St. New York

ANTIMONY GOLDEN and CRIMSON
Antimony Products & Chemical Co., Ltd.
Beckenham, Kent, England—Mfrs.
V. G. THOMAS & CO.,
99 JOHN STREET, NEW YORK
Exclusive Agents for United States and Canada

CHEMICALS—
RUBBER COLORS—ANTI-OXIDANTS
ACCELERATORS
Di-ortho-Tolylguanidine, Diphenylguanidine. Methylene-para-toluidine; Formaldehydeaniline. Vulcanol, Thionex, Vulcone, Vulcanex
E. I. du Pont de Nemours & Co., Inc.
Wilmington, Del.

ACCELERATORS
Grasselerator 102 Grasselerator 552
Grasselerator 833 Grasselerator 808
Grasselli Chemical Co.
Rubber Service Dept.
347 Madison Ave. New York

ASBESTINE—Specially prepared for use in Rubber. Send for liberal working sample.
SOLE PRODUCERS
International Pulp Co.
41 Park Row New York City

CHEMICALS
CARBON BLACK—CROW BRAND
LAMPBLACK
QUINOIDINE
R. W. Greeff & Co.
64 Water St. New York

ACCELERATORS
Triphenylguanidine
Para-Nitrosodimethylaniline
Thiocarbanilide
National Aniline & Chemical Company, Inc.
40 Rector St. New York City

CARBON BLACK—*Micronex* the world's standard gas black, universally known as the "King of Rubber Pigments."
Binney & Smith Co.
41 East 42nd St. New York City

CHEMICALS— Accelerators
Trimene Base, Heptene, Monex, Crylene, Lithex, Aniline Oil.
Clay—Mineral Flour, Seminole (Georgia).
Antioxidant—VGB, a proven product.
Labels—all-rubber two color brands.
Naugatuck Chemical Co.
1790 Broadway, New York

ACCELERATORS—Every lot is tested before shipment and a written guarantee of quality furnished.
Roessler & Hasslacher Chemical Co.
709 Sixth Ave. New York City

CARBON BLACK
Godfrey L. Cabot, Inc.
Manufacturers for forty years
940 Old South Bldg., Boston, Mass.
612 Metropolitan Bldg., Akron, O.

CHEMICALS and compounding ingredients; Clay, Whiting, Accelerators, Mineral Rubber.
R. T. Vanderbilt Co.
50 East 42nd St. New York City

ACCELERATORS
A-7 A-11 A-16 A-19 A-20 A-32 Z-88
A-5-10, DPG, THIO
RESISTOX, OXYNONE
The RUBBER SERVICE LABORATORIES CO.
611 Peoples Savings & Trust Bldg.
Akron, Ohio

CARBON BLACK—*Aerfloted* Arrow Black for rubber compounding. Standard for grit-free uniformity.
J. M. Huber, Inc.
460 West 34th St. New York

CHEMICALS and Mineral Ingredients—Whiting, Clay, Talc, Barytes, Colors, Heavy Calcined Magnesia, Carbonate of Magnesia, Pumice Stone.
Standard Since 1890
Whittaker, Clark & Daniels, Inc.
245 Front St., New York

ALUMINUM FLAKE
"The Standard for 20 Years"
REINFORCES—TOUGHENS
Uniform—Pure—Fine—Low S. G.
THE ALUMINUM FLAKE CO.
AKRON, OHIO

CATALPO—The universal and standard rubber pigment now being used in treads, solids, tubes, carcass frictions, etc.
Moore & Munger
33 Rector Street
New York City

CHEMICALS and COLORS
for all classes of mixing and cure. Complete rubber laboratory service for our customers.
Wishnick-Tumpeer, Inc.
New York Chicago Cleveland Boston

ANTIMONY Pentasulphide, golden and crimson, very fine, pure.
Rare Metal Products Co.
Belleville, N. J.
Direct Factory Representation

CHEMICALS—A line of Quality materials for the Rubber Industry—Softeners—Accelerators—Solvents.
William Cooper & Nephews, Inc.
1909 Clifton Ave. Chicago, Ill.
AKRON MANAGER
R. A. SPERRY 134 E. Miller Ave.

CLAYS for the rubber trade.
ALUMINITE
THE CLAY SUPREME
United Clay Mines Corp.
General Offices, Trenton, N. J.
High Grade CLAYS of All Kinds

THE MARKET PLACE Section Continued on Next Page

A Section Devoted to Listings of Leading Producers and Distributors of Raw Materials, Machinery and Equipment, and Supplies for the Rubber Industry.

The Market Place

Chemicals and Compounding Materials — Machinery and Equipment—Crude, Reclaimed and Scrap Rubber—Fabrics—Rubber Products — Consulting Engineers.

Chemical and Compounding Materials (continued)

COLORS
BRILLIANT ORGANIC DYES; PERMANENT, NON-BLEEDING, LOW COST For All Cures
The RUBBER SERVICE LABORATORIES CO.
611 Peoples Savings & Trust Bldg.
Akron, Ohio

PIGMENTAR— "Sunny South," "Pentarco," "American." Brands for Tires, Tubes, Mechanicals,—Reclaim. *The Best Softener.*
E. W. Colledge, Inc.
P. O. Box 356 Jacksonville, Fla.
Agents in New York, Chicago, Cleveland

STEARIC ACID
Specially Prepared for the Rubber Industry
A. GROSS & CO.
Factory—Newark, N. J.
Sales Office: 90 West Street, New York

CUMAR—Paracumarone Resin.
A neutral gum for rubber compounding.
Samples and prices on request.
The Barrett Company
40 Rector St. New York City

RED OXIDE—A special grinding, guaranteed uniform in color and quality.
Joseph A. McNulty
114 Liberty St. New York City

SULPHUR— *"Tire"* Brand Superfine; *"Tube"* Brand Velvet; quality Sulphur for the rubber trade.
Stauffer Chemical Co. of Texas
Petroleum Bldg. Houston, Texas
San Francisco, Cal. Chauncey, N. Y.

DEGRAS—Wool Grease
NO BETTER OR CHEAPER SOFTENER
Does Not Oxidize or Discolor
W. L. Montgomery & Co.
10 High St. Boston, Mass.

RED OXIDE
Uniform, Bright, Fine, Low Gravity, Acid and Manganese Free.
"Derby" Oxide, English Standard for over 30 Years.
V. G. THOMAS & CO.
99 John St., New York
Exclusive Agents for the United States

SULPHUR—Pioneer Brand
A high quality Sulphur of *Known Reliability*
St. Louis Sulphur & Chem. Co.
St. Louis Missouri
Wishnick-Tumpeer, Inc., Selling Agents

DPG — DOTG
Sulphur
American Cyanamid Co.
535 Fifth Avenue New York

RUBBER SUBSTITUTES
White, brown and black.
Carter Bell Mfg. Co.
150 Nassau St. New York

TASCO SOFTENER
XX for Treads, X-200 for Carcass Stocks, X-500 for Reclaiming
Give improved working properties without degrading quality.
Tasco Asphalt Company
238 Wilson Ave. Newark, N. J.

FACTICE—Prevents blooming, makes colors fast and a smoother batch.
Stamford Rubber Supply Co.
Stamford, Conn.

SOFTENERS—Fluxrite
We are specialists in Softeners and invite your investigation.
Damascus Manufacturing Co.
Cleveland, Ohio

WHITING & PARIS WHITE
manufactured from *Genuine English Chalk* and *Cliffstone*—no adulterations.
Southwark Mfg. Co.
Camden New Jersey

NAPHTHAS
Dipped Goods Naphthas
Rubber Solvent Gasolines
Tank Cars of 4, 6 or 8000 gal. capacity
Anderson-Prichard Oil Corp.
Oklahoma City Oklahoma

STEARIC ACID
STEAREX, the product standardized for rubber compounding.
Binney & Smith Co.
41 East 42nd St., New York City

ZINC OXIDES
XX Red — Kadox — Special
ALBALITH (Super-Lithopone)
The New Jersey Zinc Sales Co.
New York Pittsburgh Chicago
Cleveland San Francisco

PARA-FLUX
The Universal Softener—Adaptable, Uniform, Improves Quality—Economical.
The C. P. Hall Co.
116 Central Savings and Trust Bldg.
Akron, Ohio

Do you BELIEVE in your products?
Then you should believe in telling the rubber industry all about them. The MARKET PLACE is the logical place to display your wares.

THE MARKET PLACE Section Continued on Next Page

A Section Devoted to Listings of Leading Producers and Distributors of Raw Materials, Machinery and Equipment, and Supplies for the Rubber Industry.

The Market Place

Chemicals and Compounding Materials — Machinery and Equipment—Crude, Reclaimed and Scrap Rubber—Fabrics—Rubber Products — Consulting Engineers.

Machinery and Equipment

BOLTON BIAS CUTTER
Cuts cord or flat woven fabrics with equal ease and precision. In use all over the world.
Spadone Machine Co., Inc.
15 Park Row New York

CALENDERS—Embossing, for artificial leather, oil cloth, etc.
Textile-Finishing Machinery Co.
83 Exchange Pl., Providence, R. I.

CORES & DRUMS
India Collapsible Cores
Tire Molds
Collapsible Tire Building Drums
India Machine & Rubber Mold Co.
Akron, Ohio

DRY KILN— for drying crude rubber and chemicals — Hunter Process.
Carrier Engineering Corporation
850 Frelinghuysen Ave., Newark, N. J.

ENGINEERS
Machinists, Iron and Steel Founders
Standard and Special
Rubber Working Machinery
The Adamson Machine Co.
Akron, Ohio

ENGINEERS & Machinists
Cores, Chucks, Power Stands, Stock Racks, Tube MOLDS, Book Type MOLDS, Special Machinery.
National Rubber Machinery Co.
DeMattia Brothers Plant
Clifton, New Jersey

GEARS OF ALL KINDS
Speed Reducers,
Flexible Couplings,
Friction Clutches
SPECIAL MACHINERY BUILT TO ORDER
Foote Bros. Gear & Machine Co.
264 Curtis Street, Chicago

MACHINERY—RUBBER
Washers, Crackers, Mills, Refiners, Calenders, Drives, Hydraulic Presses, Banbury Mixers and Special Machinery.
Farrel-Birmingham Co., Inc.
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MACHINERY—RUBBER
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A Section Devoted to Listings of Leading Producers and Distributors of Raw Materials, Machinery and Equipment, and Supplies for the Rubber Industry.

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A standardized grade for every requirement.
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TIRES & TUBES
CRUDE RUBBER

STATISTICAL SECTION

AUTOMOBILES
GASOLINE

WITH February consumption of crude rubber in the United States at 41,594 tons, every indication points to a total consumption for the first quarter of the year of more than 127,000 tons, or approximately 10,000 tons greater than for any other three months in the history of the domestic industry. Tire production is at full capacity in Akron and other rubber centres, and the output of other rubber goods is keeping pace.

So high was the domestic absorption that the total quantity of rubber stocks on hand in this country and afloat to American ports showed a decrease at the end of February for the first time in four months. At the end of January, these stocks were figured to be 154,938 tons, but by February 28 they had dropped to 153,883 tons. Both of these figures are only slightly above the total stocks reported at the end of January and February in 1928, showing that there is no abnormal supply of the crude commodity.

The amount of rubber invoiced to the United States in the week ended March 2 was 15,509 tons, the highest figure since November. Shipments in the following week were more than 3,000 tons lower, and in the week ended March 16 they had dropped below the 10,000-ton level. Stocks of crude rubber in London and at Singapore and Penang are increasing slowly, but the former is still considerably less than half the amount reported a year ago.

Latest figures covering imports and exports from the leading producing and consuming countries have been added to the appropriate tables in this section.

PLAN OF THE SECTION

The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available. The section accordingly affords the most up-to-date, complete and convenient statistical service in the industry.

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U. S. Imports and Exports of Crude Rubber

	Gross Imports			Re-exports			Net Imports
YEARS	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons
1921	185,394	73,772,677	17.76	5,716	2,414,924	18.86	179,678
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927	426,258	339,874,774	35.60	27,775	24,735,488	39.76	398,483
1928	439,731	244,854,973	25.03	32,159	18,128,361	25.17	407,572
1926:							
July	35,820	33,061,281	41.20	1,554	1,743,854	50.09	34,266
Aug.	27,400	24,670,752	40.21	1,318	1,339,563	45.38	26,082
Sept.	37,112	32,625,032	39.25	1,437	1,519,870	47.20	35,675
Oct.	29,746	25,320,558	38.49	1,366	1,316,270	43.03	28,110
Nov.	39,155	34,890,536	39.78	1,482	1,411,517	42.51	37,673
Dec.	37,754	33,261,366	39.33	1,904	1,841,305	43.16	35,850
1927:							
Jan.	43,340	36,753,719	37.86	1,525	1,444,734	42.28	41,815
Feb.	28,337	23,110,257	36.41	2,451	2,277,297	41.47	25,886
Mar.	35,515	28,693,016	36.07	2,763	3,249,665	52.50	32,752
Apr.	46,202	37,321,505	36.06	1,575	1,428,425	40.48	44,627
May	36,518	30,984,377	37.88	2,782	2,501,562	40.14	33,736
June	33,045	27,850,014	37.62	1,775	1,550,592	39.00	31,270
July	37,677	31,678,259	37.53	1,958	1,560,853	35.59	35,719
Aug.	32,810	26,396,931	35.92	1,809	1,382,768	34.12	31,001
Sept.	33,301	25,314,412	33.94	3,500	3,036,929	38.74	29,801
Oct.	30,184	22,163,282	32.78	2,513	2,042,718	36.29	27,671
Nov.	38,592	27,395,428	31.69	2,469	2,014,196	36.43	36,123
Dec.	30,737	22,213,574	32.26	2,655	2,245,754	37.77	28,082
1928:							
Jan.	39,107	30,278,444	34.56	1,988	1,734,990	38.95	37,119
Feb.	33,663	27,763,655	36.82	2,738	2,229,589	36.35	30,925
Mar.	40,611	32,103,042	35.29	3,718	2,587,435	31.07	36,893
Apr.	37,935	27,287,266	32.11	2,272	1,415,024	27.80	35,663
May	31,059	19,058,672	27.39	2,399	1,386,307	25.80	28,660
June	27,765	14,121,219	22.71	2,621	1,400,697	23.86	25,144
July	31,258	14,144,765	20.20	3,087	1,451,446	20.99	28,171
Aug.	31,204	12,860,150	18.39	2,377	1,084,646	20.37	28,827
Sept.	39,835	16,512,019	18.50	3,038	1,384,148	20.34	36,797
Oct.	44,058	18,200,332	18.44	2,405	1,085,407	20.15	41,653
Nov.	36,519	14,878,441	18.19	2,788	1,207,089	18.52	33,731
Dec.	43,511	17,580,966	18.04	2,738	1165,743	19.00	40,773
1929:							
Jan.	57,564	22,872,943	17.74	3,663	1,773,401	21.61	53,901
Feb.	64,265	24,760,111	17.20				
Mar.							
Apr.							
May							
June							

U. S. Consumption of Crude Rubber

(Rubber Association of America statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1922	1923	1924	1925	1926	1927	1928	1929
Jan.	16,938	30,106	29,058	29,638	32,196	31,518	34,403	43,002
Feb.	14,767	30,149	25,736	19,761	31,136	30,137	33,702	41,594
Mar.	21,408	36,629	28,385	33,498	32,936	36,141	35,688	
Apr.	19,294	29,085	27,129	34,139	32,696	35,871	32,772	
May	23,246	36,155	25,845	35,322	29,364	34,592	37,333	
June	31,713	24,272	22,753	35,822	28,598	33,801	37,676	
July	24,522	17,685	23,396	36,053	27,577	29,219	37,407	
Aug.	29,631	20,359	28,982	35,909	34,533	33,460	42,927	
Sept.	24,410	17,594	31,497	31,691	32,904	27,214	39,882	
Oct.	26,881	21,321	31,520	29,047	29,836	26,790	40,857	
Nov.	24,950	20,437	27,289	28,853	28,080	26,792	37,461	
Dec.	25,070	31,902	27,199	28,748	26,293	25,492	31,232	
Totals	282,560	305,694	328,769	388,481	366,149	371,027	441,340	

Figures on Quarterly Basis

Quarter	1921	1922	1923	1924	1925	1926	1927	1928
Jan./Mar.			96,776	87,609	95,263	94,301	99,216	103,558
Apr./June	65,463	127,360	89,493	75,674	104,099	87,109	103,242	103,500
July/Sept.			55,621	83,813	99,493	93,793	89,210	117,573
Oct./Dec.	105,962	155,067	63,617	92,656	85,789	83,212	80,860	117,597
Totals	171,425	282,427	305,507	339,752	384,644	358,415	372,528	442,227

Note—The Rubber Association estimates its monthly rubber consumption figures to be 90 per cent complete. Up until 1925 the quarterly figures were likewise estimated to be 90 per cent complete; beginning with 1925 an estimate of 92 per cent completeness has been used. These estimates have been used in raising the figures in this table to 100 per cent. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

Rubber Invoiced to the U. S.

(Reported by American Consuls—Quantities in Long Tons)

During the Week Ended	From Br. Malaya	From Ceylon	From Dutch East Indies	From London & Liverpool	Total
Dec. 22	10,697	1,766	1,642	96	14,201
Dec. 29	8,613	577	2,197	8	11,395
Jan. 5	10,035	1,479	1,608	15	13,137
Jan. 12	9,075	1,628	1,807	299	12,809
Jan. 19	9,469	1,231	2,152	211	13,063
Jan. 26	7,163	1,650	2,271	47	11,131
Feb. 2	9,216	1,784	2,612	23	13,635
Feb. 9	8,341	1,066	1,773	65	11,245
Feb. 16	3,771	1,648	1,982	174	7,575
Feb. 23	9,610	559	1,556	55	11,780
Mar. 2	10,200	1,510	3,744	55	15,509
Mar. 9	8,281	1,974	1,974	9	12,238
Mar. 16	7,370	572	1,977	9	9,928

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Ave.
1926																																
August	—	35¾	36½	37	37	36¾	39	—	36¾	37¾	37½	37½	37½	38¾	40½	40¼	40½	40½	40½	39	39	39½	39¼	39	39	39	39	39½	40	40	38¾	38¾
September	40¼	40¾	40¾	—	—	42¾	42½	40¼	40¼	40¼	40¾	40¾	—	40¾	40¼	40¼	40¼	40¼	42½	42½	42	42	41¾	42¼	42¼	42½	42¼	42¼	42¼	42¼	—	41	42½
October	43	43	—	43¾	43	42¾	42½	42½	42½	42½	42½	42½	42½	42½	43	43¼	43¼	43¼	42½	42½	42½	42⅝	42½	—	42½	42½	42½	42½	42½	42½	—	42½
November	41¾	41	41	41¾	41½	41½	41½	41½	41½	42¾	41¾	41¾	41¾	41¾	40¾	40¾	40¾	40½	38½	39	39	38½	38	39	38	—	39	39	87	87	38¾
December	36¾	37½	37½	37½	37	37	37	37	37	37	37½	37½	37½	37¾	37¾	38	38	38	—	38	38¼	38½	38¾	39	—	—	39	39	38½	38¼	38¾
1927																																
January	—	38½	39	39	39¾	39¾	40	40	—	40½	40	40	40	39¾	39¾	—	39¾	38½	39	39	38½	38¾	38¾	38¾	39	39	38½	38¾	38	—	38	38¾
February	—	37½	37½	37½	37½	—	—	40¾	40¾	40¾	40¾	—	—	40¾	40¾	40¾	40¾	40¾	41	41	41	41¾	41½	41	41	41	41	41¾	41¾	41¾	—	41	41
March	—	39¾	39¾	40	41	41	41¼	40¾	40¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	40¾	40¾	40½	41	41¾	40¾	40¾	40¾	40½	40¾	40¾	40½	40½	40¾	40¾
April	—	41¾	41¾	41	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾
May	—	41¾	41¾	41¾	41	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾
June	—	40¾	40¾	40¾	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
July	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
August	—	85½	85½	86¼	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½
Sept.	—	84	83¾	83½	83½	83½	83½	83½	83½	83½	83½	83½	83½	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84
Oct.	—	83¾	83¾	83½	83½	83½	83½	83½	83½	83½	83½	83½	83½	84¼	84¼	84¼	84¼	84¼	84¼	84¼	84¼	84¼	84¼	84¼	84¼	84¼	84¼	84¼	84¼	84¼	84¼	84¼
Nov.	—	85¼	85½	85½	86¼	86¼	86¼	86¼	86¼	86¼	86¼	86¼	86¼	86¼	86¼	86¼	87¼	87¼	87¼	87¼	87¼	87¼	87¼	87¼	87¼	87¼	87¼	87¼	87¼	87¼	87¼	87¼
Dec.	—	40½	40½	—	40¾	—	—	40¾	40	40½	—	40¼	40	40	39¾	—	—	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40½	41¼	41¼	41¼	41½	41½	40¾
1928																																
January	—	87½	87½	87½	87½	—	—	87½	87½	—	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½
February	—	87½	87½	87½	87½	—	—	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½
March	—	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½
April	—	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½
May	—	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½
June	—	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½
July	—	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½
August	—	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½
September	—	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½
October	—	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½
November	—	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½
December	—	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½
1929																																
January	—	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½
February	—	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½
March	—	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½

Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1921

Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15
1911	141.30	1915	65.85	1919	48.70
1912	121.60	1916	72.50	1920	36.30
1913	82.04	1917	72.23	1921	16.36

Average Monthly Price per Pound Since 1922

Months	1922 Cents	1923 Cents	1924 Cents	1925 Cents	1926 Cents	1927 Cents	1928 Cents	1929 Cents
Jan.	18.82	32.73	25.86	36.71	79.50	38.75	40.25	20.14
Feb.	16.12	35.14	25.29	36.01	62.25	38.25	32.75	23.97
Mar.	14.53	34.21	22.83	41.00	59.00	41.04	26.82	——
Apr.	15.99	32.48	22.51	43.64	51.25	40.86	18.97	——
May	15.25	27.39	18.89	58.47	47.75	40.76	18.99	——
June	15.11	26.88	18.81	77.26	42.50	37.25	19.59	——
July	14.67	26.10	22.16	103.16	41.03	34.87	19.40	——
Aug.	13.93	28.84	26.17	82.99	38.50	35.12	19.46	——
Sept.	14.44	28.95	27.56	88.88	41.00	33.67	18.47	——
Oct.	19.78	26.93	31.13	98.01	42.50	34.32	18.83	——
Nov.	23.88	27.14	34.33	104.80	38.50	37.58	18.26	——
Dec.	27.42	26.60	37.88	98.51	38.25	40.63	17.97	——
Average for Year	17.50	29.45	26.20	72.46	48.50	37.72	22.48	——

London Closing Prices of Ribbed Smoked Sheet

(In Pence Per Pound)

Day	Dec.	Jan.	Feb.	Mar.	Day	Dec.	Jan.	Feb.	Mar.
1	8½	—	11⅛	12⅞	17	8½	10¼	—	—
2	—	8⅝	11	13½	18	8⅝	10⅛	12½	12
3	8½	8⅝	—	—	19	8⅝	10⅛	12½	11⅞
4	8½	8⅝	10¾	13¼	20	8⅝	—	12⅝	—
5	8½	8⅝	11	12¾	21	8⅝	10⅛	12½	—
6	8½	—	10⅞	12⅝	22	8⅝	10¼	13	—
7	8⅝	8¾	10⅞	12⅝	23	—	10⅝	13⅛	—
8	8½	8⅞	10⅞	12⅝	24	8⅝	11	—	—
9	—	9⅛	11	12⅝	25	—	10⅞	13⅛	—
10	8½	9¼	—	—	26	8⅝	11	13¼	—
11	8½	9¾	11⅛	12¾	27	8⅝	—	13⅛	—
12	8½	10⅝	11	12⅝	28	8¾	11⅛	12⅝	—
13	8½	—	11¼	12⅝	29	8¾	10⅝	—	—
14	8½	10¼	11⅜	12¼	30	—	10⅝	—	—
15	8½	10	11⅞	12¼	31	8⅝	11	—	—
16	—	10⅛	12⅝	12					

Average Monthly Price Per Pound

Month	1927 Pence	1928 Pence	1929 Pence	Month	1927 Pence	1928 Pence	1929 Pence
Jan.	19.410	19.310	9.942	Aug.	17.202	9.300	——
Feb.	19.021	15.713	11.875	Sept.	16.293	8.530	——
Mar.	20.125	12.736	——	Oct.	16.366	8.307	——
Apr.	19.897	8.864	——	Nov.	18.159	8.596	——
May	19.769	8.845	——	Dec.	19.690	8.570	——
June	17.880	9.293	——	Average for Year	18.375	10.656	——
July	16.770	9.312	——				

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	Feb.	Mar.	Day of Month	Feb.	Mar.	Day of Month	Feb.	Mar.
1	20.05	20.70	11	20.20	21.45	21	20.25	——
2	20.05	20.80	12	——	21.35	22	——	——
3	——	——	13	20.30	21.45	23	——	——
4	19.85	20.90	14	20.20	21.45	24	——	——
5	19.85	21.30	15	20.15	21.55	25	20.55	——
6	19.95	21.15	16	20.25	21.35	26	20.60	——
7	20.00	21.40	17	——	——	27	20.80	——
8	20.05	21.65	18	20.35	21.05	28	20.70	——
9	20.00	21.65	19	20.25	21.15	29	——	——
10	——	——	20	20.25	——	30	——	——
						31	——	——

Average Monthly Price Per Pound

Month	1927 Cents	1928 Cents	1929 Cents	Month	1927 Cents	1928 Cents	1929 Cents
Jan.	13.42	19.12	20.22	Aug.	20.04	19.28	——
Feb.	14.10	18.40	20.21	Sept.	21.95	18.67	——
Mar.	14.32	19.38	——	Oct.	20.22	19.62	——
Apr.	14.75	20.63	——	Nov.	20.22	19.34	——
May	16.07	21.58	——	Dec.	19.58	20.22	——
June	16.85	21.50	——	Average for Year	17.49	19.97	——
July	18.00	21.36	——				

Stock of Crude Rubber in the U. S.

(All Quantities in Long Tons)

At End of	ON HAND			AFLOAT			ON HAND AND AFLOAT		
	1927	1928	1929	1927	1928	1929	1927	1928	1929
Jan.	76,172	110,244	76,342	45,312	41,256	78,596	121,484	151,500	154,938
Feb.	91,186	108,955	90,058	42,166	43,316	63,825	133,352	152,271	153,883
March	85,740	114,061		49,600	39,324		135,340	153,385	
April	92,757	113,083		38,963	33,986		131,720	147,069	
May	94,563	105,356		44,181	34,374		138,744	139,730	
June	89,250	90,198		47,233	40,001		136,483	130,119	
July	93,469	83,242		40,687	42,304		139,056	125,546	
Aug.	96,148	68,994		40,937	51,875		137,085	120,869	
Sept.	97,829	68,851		37,966	48,566		135,795	117,417	
Oct.	97,452	66,421		42,804	41,571		140,256	107,992	
Nov.	101,034	61,956		37,076	68,119		138,110	130,075	
Dec.	100,130	66,166		47,938	68,764		148,068	134,930	

(Rubber Association of America figures raised to 100%.)

Stock of Crude Rubber in London

(No. of tons in Wharves and Warehouses, including Latex)

At end of:	1921	1922	1923	1924	1925	1926	1927	1928	1929
Jan.	56,573	67,252	73,498	57,460	27,172	9,994	54,994	66,524	25,191
Feb.	59,439	67,623	70,483	56,732	23,425	10,004	58,826	62,964	
Mar.	63,913	66,670	63,436	55,647	18,104	13,127	63,055	58,272	
Apr.	68,759	68,637	58,770	54,559	12,949	18,773	66,897	53,425	
May	70,403	70,146	54,439	51,615	5,895	20,384	67,169	44,628	
June	69,408	71,597	51,050	51,115	5,318	23,984	63,902	38,756	
July	71,065	71,515	49,937	52,073	4,258	27,727	63,717	35,429	
Aug.	73,211	72,112	58,427	49,700	4,619	30,165	64,491	32,084	
Sept.	72,175	70,977	54,523	44,011	5,453	35,077	68,286	31,440	
Oct.	69,229	68,536	58,891	37,523	5,086	42,138	69,569	24,207	
Nov.	70,786	68,548	60,074	33,593	3,869	44,057	67,050	17,775	
Dec.	69,792	72,299	60,246	29,488	5,697	48,918	63,793	19,815	

At End of Recent Weeks

	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
1928					
March	61,978	61,920	61,033	59,644	58,197
April	58,732	58,945	56,819	53,360	——
May	52,015	50,837	48,705	44,628	——
June	43,716	42,683	41,185	40,083	38,611
July	36,915	35,925	35,238	35,445	——
August	34,294	33,649	32,591	32,815	——
September	31,933	31,477	32,110	31,884	31,462
October	29,525	27,370	26,477	24,240	——
November	22,919	21,494	20,194	18,724	——
December	16,855	16,517	17,669	18,821	19,727
1929					
January	21,953	23,016	23,547	24,423	——
February	25,389	25,413	24,757	25,005	——
March	25,441	25,920	26,442		——

Rubber in Singapore and Penang

(Stocks held by Dealers—Quantities in Long Tons)

End of	1927	1928	1929	End of	1927	1928	1929
Jan.	25,440	25,868	29,617	July	22,558	18,663	——
Feb.	26,766	22,867	32,373	Aug.	25,764	18,971	——
Mar.	27,844	20,538	——	Sept.	25,178	14,898	——
Apr.	24,543	16,946	——	Oct.	25,790	12,149	——
May	25,133	17,437	——	Nov.	28,369	29,188	——
June	21,898	18,207	——	Dec.	25,798	32,895	——

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1923	23,140,620	0.6	1926	24,199,524	78.8
1924	21,863,311	19.7	1927	19,700,003	79.1
1925	26,001,664	66.8	1928	24,247,282	81.6
1928			1929		
July	2,209,692	85.9	January	1,835,207	79.4
August	2,318,898	80.2	February	2,265,024	80.8
September	2,315,604	76.9	March		
October	2,114,611	72.2	April		
November	1,213,245	66.4	May		
December	1,101,193	74.7	June		

U. S. Consumption of Gasoline

(In Barrels of 42 Gallons)

MONTHS	1925	1926	1927	1928	1929
January	14,386,000	17,582,000	17,888,000	20,938,000	22,602,000
February	13,210,000	15,814,000	18,240,000	21,136,000	
March	14,890,000	19,302,000	22,464,000	24,041,000	
April	19,013,000	20,848,000	23,371,000	25,712,000	
May	20,459,000	24,213,000	26,579,000	27,355,000	
June	20,724,000	23,803,000	27,799,000	29,022,000	
July	22,879,000	24,752,000	29,784,000	30,960,000	
August	22,323,000	26,912,000	29,779,000	33,148,000	
September	20,177,000	22,929,000	28,409,000	29,691,000	
October	19,826,000	23,973,000	25,497,000	30,610,000	
November	18,024,000	20,618,000	24,400,000	26,222,000	
December	17,954,000	21,419,000	23,718,000	26,644,000	
TOTAL	223,865,000	262,165,000	297,928,000	327,932,000	

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1922	1923	1924	1925	1926	1927	1928
Production	40,932	45,259	51,633	60,845	61,237	64,439	77,944
Shipments	39,987	45,204	50,120	59,262	59,002	64,059	74,296
Inventory[2]	6,132	5,772	7,427	8,142	10,456	10,264	13,624

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1926	1927	1928	1926	1927	1928	1926	1927	1928
Jan.	4,587	4,965	5,491	2,974	4,932	5,394	9,947	10,432	9,949
Feb.	4,865	5,095	6,363	3,436	4,458	5,031	11,164	11,075	11,721
Mar.	5,456	6,276	6,819	4,561	5,701	5,731	12,004	11,583	12,389
Apr.	5,346	6,299	6,178	4,980	5,701	5,812	12,461	12,122	12,717
May	5,023	6,151	6,759	5,211	5,657	6,457	12,343	12,462	13,024
June	5,422	6,202	6,692	5,724	6,253	7,117	11,968	12,462	12,162
July	4,950	5,087	6,498	6,337	5,973	7,895	10,592	11,326	11,157
Aug.	5,872	5,752	7,469	6,744	6,393	8,403	9,732	10,721	10,034
Sept.	5,706	4,822	6,802	6,040	5,717	7,145	9,318	9,722	9,765
Oct.	5,103	4,773	7,326	4,544	4,799	5,717	9,917	9,665	11,520
Nov.	4,824	4,502	6,075	3,733	4,306	4,998	10,297	10,136	12,579
Dec.	4,683	4,497	5,605	4,718	4,165	4,591	10,456	10,264	13,624

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1922	1923	1924	1925	1926	1927	1928
Production	50,850	60,116	70,706	82,614	76,618	70,823	80,180
Shipments	49,673	59,072	68,016	81,004	71,591	72,896	77,127
Inventory[2]	7,643	8,425	11,052	11,313	16,200	13,692	16,117

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1926	1927	1928	1926	1927	1928	1926	1927	1928
Jan.	6,809	5,337	5,441	3,723	6,016	6,072	14,361	15,585	12,982
Feb.	6,825	5,658	6,895	3,736	5,120	5,431	17,090	16,075	14,650
Mar.	7,030	7,184	6,231	4,987	6,157	5,731	19,131	17,096	15,573
Apr.	6,554	7,373	6,661	5,051	6,359	5,702	20,674	17,801	16,638
May	6,149	6,737	7,168	6,304	6,140	6,300	21,141	18,389	17,702
June	6,171	6,306	6,953	6,898	6,832	7,136	20,243	17,858	17,159
July	5,729	5,284	6,674	8,569	7,070	8,729	17,267	16,004	14,974
Aug.	7,424	6,480	8,343	9,579	7,983	9,350	15,462	14,664	13,931
Sept.	7,590	5,651	7,103	7,762	6,758	7,154	15,312	13,511	13,543
Oct.	6,208	5,065	6,929	5,474	5,024	5,662	15,929	13,539	15,285
Nov.	4,852	4,775	5,592	4,045	4,723	5,002	16,604	13,585	15,743
Dec.	5,277	4,969	5,184	5,463	4,712	4,858	16,200	13,692	16,117

(1) Rubber Association of America figures, raised to 100%. The Association estimates its figures to be 75% representative or complete when issued and that basis has been accepted when preparing the statistics in this table.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	United States			Canada			
	Total	Passenger Cars	Trucks	Total	Passenger Cars	Trucks	Grand Total
1922	2,547,208	2,302,923	244,285	102,053	94,904	7,149	2,649,261
1923	4,020,255	3,631,728	388,527	146,438	129,228	17,210	4,166,693
1924	3,600,918	3,203,049	397,869	135,246	117,765	17,481	3,736,164
1925	4,265,704	3,760,459	505,245	161,389	139,311	22,078	4,427,093
1926	4,298,799	3,808,753	490,046	205,092	164,483	40,609	4,503,891
1927							
July	268,474	236,866	31,608	10,987	8,719	2,268	279,461
Aug.	308,807	274,378	34,429	12,526	10,139	2,387	321,333
Sept.	260,420	226,440	33,980	11,262	8,681	2,581	271,682
Oct.	219,712	183,041	36,671	7,791	6,236	1,555	227,503
Nov.	134,381	109,742	24,639	6,617	5,173	1,444	140,998
Dec.	133,178	105,784	27,394	3,435	2,277	1,158	136,613
TOTAL	3,393,887	2,938,868	453,019	179,426	146,870	32,556	3,573,313
1928							
Jan.	225,039	199,032	26,007	8,463	6,705	1,758	282,502
Feb.	323,368	290,830	32,358	12,504	10,315	2,189	335,872
March	412,825	371,408	41,417	9,724	7,478	2,246	422,549
April	409,948	364,877	45,071	24,240	20,546	3,694	434,188
May	425,990	375,798	50,192	33,942	29,764	4,178	459,932
June	396,967	356,439	40,528	28,399	25,341	3,058	425,366
July	390,445	237,933	52,512	25,226	20,122	5,104	415,671
Aug.	458,429	400,689	57,740	31,245	24,274	6,971	489,674
Sept.	413,722	358,872	54,850	21,193	16,572	4,621	434,915
Oct.	397,096	339,976	57,120	18,536	13,016	5,520	415,632
Nov.	256,936	217,256	39,680	11,769	8,154	3,615	268,705
Dec.	238,135	205,144	27,991	9,425	6,734	2,691	242,560
TOTAL	4,357,384	3,826,613	530,771	242,382	196,737	45,645	4,599,944
1929							
Jan.	402,154	350,617	51,537	21,501	17,164	4,337	423,655
Feb.	466,084	407,589	58,495	31,287	28,486	2,801	497,371
March							
April							
May							
June							

Exports of Crude Rubber from Principal Producing Countries

(Long Tons)

	BRITISH MALAYA[1]							DUTCH EAST INDIES[1]						
	Gross Exports	Gross Exports Minus Imports	Imports	Ceylon[2]	India & Burma[3]	Sarawak[4]	British North Borneo[3]	Siam[4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China[5]	Amazon Valley	All Other[6]	World Total[7]
1923	252,016	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,958
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	517,523
1926	391,328	151,248	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,530
1927	371,322	182,845	188,477	55,356	11,321	10,923	6,582	5,472	55,297	77,815	142,171	8,645	28,782	15,633	606,474
1928	409,430	149,787	259,643	57,267	10,790	10,087	6,505	4,813	58,848	82,511	121,770	9,548	21,129	10,690	653,601
1927:															
Jan.	34,946	14,995	19,951	6,697	921	959	585	304	4,187	6,706	10,690	941	3,482	981	56,404
Feb.	27,528	11,697	15,831	3,571	1,469	552	445	360	4,078	6,526	10,585	675	2,104	1,096	47,244
Mar.	41,846	17,464	23,382	7,142	1,124	997	639	432	5,657	7,004	12,905	783	3,178	1,791	65,484
Apr.	29,041	13,069	15,972	3,349	723	984	452	526	4,666	5,581	10,197	557	2,451	1,520	46,928
May	31,393	15,491	15,902	3,124	760	786	415	548	5,430	5,529	13,410	586	2,460	1,207	49,957
June	32,607	14,706	17,901	3,348	856	1,100	589	409	4,818	5,518	9,109	772	889	1,731	46,990
July	23,947	12,697	11,250	4,018	827	859	544	333	4,771	6,142	11,566	519	1,757	1,113	43,699
Aug.	30,371	17,105	13,266	5,357	688	1,133	623	546	4,855	6,682	12,440	716	1,928	969	48,703
Sept.	29,835	12,095	17,740	4,911	479	645	566	498	3,685	5,957	9,853	497	2,072	1,213	48,066
Oct.	29,846	15,801	14,045	5,245	802	721	591	542	3,810	7,755	13,633	775	2,752	939	51,520
Nov.	26,277	19,860	8,417	4,464	1,277	1,241	591	600	4,127	6,587	14,395	683	2,369	1,627	46,878
Dec.	32,185	17,865	14,320	4,130	1,395	946	592	664	5,763	7,878	13,438	1,191	3,340	1,444	55,101
1928:															
Jan.	27,789	16,618	11,171	3,830	1,605	842	581	525	4,851	7,988	11,774	1,100	2,273	1,025	47,565
Feb.	28,848	12,911	15,937	4,947	1,081	667	581	536	4,052	6,757	8,630	787	1,612	1,276	46,860
Mar.	27,879	10,508	17,371	3,683	775	645	581	269	3,999	5,825	9,690	700	2,750	1,211	47,499
Apr.	20,139	9,335	10,804	3,233	789	630	494	258	3,993	5,040	5,499	736	1,014	1,323	33,810
May	26,483	10,350	16,133	3,091	654	842	494	241	4,943	5,355	10,347	717	2,602	1,135	45,994
June	22,994	16,168	6,826	3,107	963	926	494	451	5,419	5,863	13,655	725	1,399	960	40,788
July	30,481	13,383	17,098	5,129	1,043	905	593	366	5,602	7,566	11,594	698	1,264	873	52,731
Aug.	35,674	15,114	20,560	5,720	398	1,227	593	544	5,668	7,438	11,893	712	1,732	450	56,936
Sept.	29,769	11,239	18,530	4,675	457	938	594	447	4,956	6,536	9,863	969	1,614	494	50,073
Oct.	24,476	12,603	11,873	3,999	864	949	500*	457	5,295	7,474	10,124	513	1,399	732	44,179
Nov.	68,135	10,436	57,699	8,005	1,048	772	5001	425	4,950	7,902	7,805	943	1,790	623	92,462*
Dec.	66,763	11,122	55,641	7,848	1,113	744	500*	294	5,120	8,792	10,896	948	2,220	588	94,704
1929:															
Jan.	52,546	13,415	39,131	8,198		873	500*	461	5,640	8,067	11,076	395	2,134		
Feb.	47,926	12,103	35,823	7,114								965	2,104		

(1) Malayan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, 3,263 in 1926, and 2,439 in 1927. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, 20 tons in 1926, and about ½ ton in 1927. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I" are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, 44 tons in 1926, and 84 tons in 1927. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Belgium and Netherlands. This figure includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown immediately it becomes available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(Long Tons)

	United States[a]	United Kingdom	France (h)	Germany	Canada (ac)	Japan (da)	Italy	Russia (ce)	Australia (ed)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	236,977	42,671	17,685	5,584	6,395	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	342,378
1920	248,762	56,844	18,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	376,641
1921	179,678	42,087	15,135	21,920	8,124	21,713	3,906	165	1,614	1,705	1,022	1,279	2,245	569	300,562
1922	296,267	11,724	24,352	27,546	9,207	15,934	6,430	2,493	2,643	172	-3,807	1,778	589	567	395,885
1923	300,372	12,700	27,392	18,519	15,277	15,872	8,489	2,986	1,649	2,184	792	2,528	630	1,128	408,018
1924	317,747	-11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,688	-807	3,178	944	1,370	414,847
1925	381,815	4,061	32,956	33,937	19,633	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	516,493
1926	395,667	84,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	613,642
1927	398,423	60,249	34,271	38,892	26,405	20,521	11,381	12,018	9,490	6,492	636	4,224	2,055	2,672	627,786
1928	404,488	4,846	36,558	37,855	30,891	25,645	12,433		8,430	7,958	2,443	4,418	3,178		
1927:															
January	41,815	10,192	3,284	2,481	1,936	1,227	672	803	929	296	192	316	139	100	64,382
February	25,886	7,692	3,263	3,103	2,620	1,902	601	907	460	502	152	336	146	210	47,780
March	32,752	9,049	2,050	3,475	3,760	1,578	852	784	780	454	86	385	137	127	56,269
April	44,627	7,875	2,310	2,393	1,509	2,181	781	1,972	762	448	58	230	177	218	65,541
May	33,736	2,896	2,006	3,380	2,519	1,084	918	887	694	626	-57	335	155	223	49,402
June	31,270	2,282	2,387	3,632	2,096	798	942	1,506	557	583	-17	243	164	183	46,616
July	35,719	1,116	2,384	2,899	2,104	1,505	1,007	415	900	429	66	227	177	236	49,184
August	31,001	3,463	2,795	3,119	2,013	1,970	1,274	386	650	604	-63	312	138	123	47,785
September	29,801	7,800	1,956	2,891	1,850	2,025	684	518	772	552	-33	451	155	272	49,694
October	27,671	5,888	3,479	4,202	1,790	1,966	1,021	1,075	908	465	156	401	153	363	49,538
November	36,123	1,687	3,661	4,209	1,916	1,575	1,167	1,312	836	749	298	474	246	317	54,570
December	28,082	309	4,696	3,108	2,302	2,710	1,462	1,453	1,242	784	-202	514	268	300	47,028
1928:															
Jan.	37,119	1,921	1,764	2,485	2,290	1,361	760	755	802	589	52	261	335	376	50,870
Feb.	30,925	3,143	2,526	2,984	2,553	1,248	437	783	616	599	98	307	296	297	46,812
Mar.	36,893	3,179	1,902	3,521	2,989	1,694	763	231	918	816	95	351	497	398	54,254
April	35,663	—2,280	2,204	2,719	1,938	2,334	1,114	1,820	832	575	280	339	304	159	48,001
May	28,660	—5,823	3,210	2,944	2,180	2,288	1,090	3,893	655	746	209	485	220	213	40,970
June	25,144	—3,031	4,550	2,968	2,632	2,102	984	4,111	348	743	133	346	251	182	41,463
July	28,171	—1,374	2,652	3,387	2,692	2,026	1,598	724	591	895	395	294	175	384	42,610
Aug.	28,827	48	3,587	2,744	2,447	1,868	875	632	707	519	316	359	58	94	43,081
Sept.	36,797	4,199	3,524	3,553	2,810	1,837	1,278	20	603	597	345	377	277	235	56,452
Oct.	41,667	—934	3,728	4,386	2,943	3,711	1,049		776	696	141	527	250	318	
Nov.	33,836	—3,141	3,278	3,694	2,799	2,150	1,340		837	544	31	337	252	282	
Dec.	40,781	8,438	3,633	2,470	2,618	3,026	1,145		755	689	148	435	263		
1929:															
Jan.	53,922														

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—Official statistics of rubber imports by Soviet Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. *United States imports of guayule are not included in this compilation; such imports amounted to 4,305 tons in 1926; to 5,010 tons in 1927; and to 3,076 in 1928.

BOOK REVIEWS

AN ALBUM OF ENGINEERING ACHIEVEMENT. Published by the Southwark Foundry & Machine Company, 400 Washington Avenue, Philadelphia, Pa. 1929. 64 pp.

Identified since its organization in 1836 with progressive engineering history, the Southwark organization presents in this publication a pictorial record of nearly a hundred of its machinery installations, including those in 15 rubber factories. The book is large in size and the illustrations all handsomely finished.

VULCALOCK ACID DRUM AND RUBBER-LINED BARREL. Published by the B. F. Goodrich Rubber Company, Akron, O. 1928. 4 pp.

The acid drum described in this circular meets the requirements of the Interstate Commerce Commission for shipment of hydrochloric acid and certain other materials classed as dangerous. The rubber-lined barrel does not meet these requirements, but can be used for shipping many other organic and inorganic acids and inorganic salts. Each is fully described with drawings and photographs in illustration. The advantages of using such hard rubber equipment in the handling of these corrosive materials is now generally recognized in industry.

United States Imports of Guayule Rubber and Related Gums

(All quantities in Long Tons)

	Guayule		Balata		Jelutong		Gutta Percha	
	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars
1919	1,430	760,690	727	937,038	8,332	2,213,964	2,900	1,068,698
1920	758	345,985	1,064	1,260,043	5,672	2,068,501	3,183	1,520,309
1921	58	26,945	814	1,077,859	1,745	351,893	985	333,564
1922	127	57,040	812	978,765	2,335	403,812	818	281,012
1923	1,155	542,227	700	898,524	4,565	853,308	912	375,167
1924	1,356	536,392	464	568,456	6,165	1,237,100	1,408	463,610
1925	3,781	1,803,448	517	574,750	6,749	1,642,531	1,603	629,284
1926	4,305	2,562,096	354	327,213	7,263	3,127,757	1,445	661,156
1927	5,018	2,674,957	582	447,246	7,785	2,448,657	1,494	728,172
1928:	3,075	1,755,685	731	430,855	7,552	2,540,059	1,597	777,128
Jan.	432	242,339	27	24,218	588	183,705	150	86,702
Feb.	489	281,295	33	32,165	403	142,621	312	215,085
Mar.	575	365,927	32	26,460	829	388,616	115	57,833
Apr.	512	312,131	47	32,924	592	174,970	68	27,627
May	452	233,414	—	——	679	226,064	100	42,762
June	424	220,081	9	6,799	293	91,152	28	12,374
July	191	100,342	123	46,747	373	113,295	81	27,344
Aug.	—	——	399	165,460	451	126,962	147	60,738
Sept.	—	——	60	38,198	2,028	713,736	125	56,768
Oct.	—	——	121	59,358	429	129,065	239	94,570
Nov.	—	——	59	41,119	472	140,116	88	35,409
Dec.	—	——	83	58,311	522	156,154	145	59,911
1929:								
Jan.	—	——	46	30,374	484	152,260	138	62,950
Feb.	—	——	82	70,209	823	255,594	40	19,806

Reclaimed Rubber in the United States

(All Quantities in Long Tons—100% Basis)

Year	Production	Consumption Tons	Consumption % to Crude	Stocks*	Year	Production	Consumption Tons	Consumption % to Crude	Stocks*
1919	81,866	73,535	36.3	.....	1924	80,079	76,072	22.4	.....
1920	86,395	75,297	38.4	.....	1925	132,930	137,105	35.6	13,203
1921	36,725	41,351	24.1	.....	1926	180,582	164,500	45.9	23,218
1922	57,834	54,458	19.3	.....	1927	189,144	178,471	47.6	24,980
1923	74,766	69,534	22.7	.....	1928	208,516	200,200	45.4	24,785
1927:									
Jan.	16,526	12,374	39.3	25,903	July	15,488	13,842	47.4	26,599
Feb.	15,860	14,424	47.8	27,291	Aug.	15,109	15,836	47.3	25,157
Mar.	16,788	13,528	37.4	27,124	Sept.	14,392	14,790	54.3	23,429
Apr.	14,483	16,677	46.5	25,712	Oct.	16,127	17,292	64.5	22,176
May	16,159	15,754	46.1	26,419	Nov.	15,477	14,876	55.5	21,728
June	16,652	15,547	46.0	25,811	Dec.	16,083	13,431	52.7	24,980
1928:									
Jan.	14,862	18,134	52.7	21,941	July	17,278	17,173	45.9	17,305
Feb.	15,291	16,808	49.9	20,848	Aug.	19,049	15,532	36.2	15,881
Mar.	17,069	18,619	52.2	19,558	Sept.	18,693	16,022	40.2	17,991
Apr.	15,393	17,355	52.9	19,283	Oct.	17,182	16,587	41.7	17,026
May	18,945	18,201	48.8	19,127	Nov.	18,245	16,547	44.2	22,399
June	18,781	16,328	43.4	18,709	Dec.	17,728	12,894	41.3	24,785
1929:									
Jan.	18,685	19,453	45.3	24,394	July				
Feb.	18,094	17,846	42.9	23,305	Aug.				
Mar.					Sept.				
Apr.					Oct.				
May					Nov.				
June					Dec.				

*Stocks on hand at the end of month or year. Exports of reclaimed rubber, not shown in this table, amounted to 8,540 tons in 1927.

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